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The family treatment of adolescent anorexia nervosa : changes in the individual and parental expressed emotion

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**THE FAMILY TREATMENT OF ADOLESCENT ANOREXIA NERVOSA:
CHANGES IN THE INDIVIDUAL AND PARENTAL
EXPRESSED EMOTION**

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Thesis submitted for the degree of PhD

2001

To Elena, Claudia, Sasha, Benjamin

Who supported me during this work in so many ways and made it worthwhile.

Abstract

The aim of this study is to describe in detail the changes that occur during the family treatment of anorexia nervosa in adolescents and identify predictors of the main outcomes. The study also investigated problems that arise in treatment such as treatment dropout and need for admission. The sample consisted of 40 adolescents, mean age 15.5 years (SD 1.6). The outpatient treatment offered was either conjoint family therapy or separated family therapy over one year. Assessments were made just before entry into the family treatment, and three, six and twelve months later. At each of these time points there was assessment of adolescents' body mass index (BMI), and psychological adjustment using the Morgan-Russell scales. Self-report measures of adolescents' eating attitudes, mood, self-esteem and obsessive compulsive behaviour were obtained. Semi-structured family interviews were carried out to assess parental expressed emotion (EE) to the adolescents and between parents. After one year of treatment most adolescents showed significant improvement with regard to weight gain and improvement in eating attitudes and mood. However 15 had poor outcome, in terms of failure to achieve healthy weight and 8 had depressive disorder. Psychosocial adjustment and family relationships generally improved with reduced parental criticism to the adolescents, and improved warmth between parents. Adolescents' age and initial weight, but not parental EE (critical comments), were predictors of BMI and general outcome. Parental EE, specifically critical comments to the adolescent, predicted outcome of depression. Problems encountered during the year included 11 families dropping out of treatment, and 4 adolescents required hospital admission, and adolescents in these groups had poorer outcome. Methodological issues including data loss and limitations of the measures are considered. The strengths and limitations of family treatment for adolescent anorexia nervosa and possible need for other interventions are discussed.

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Acknowledgements

I would like to extend my sincere gratitude to the following persons: Dr Chris Dare for his consistent support, encouragement and constructive criticism with this project, and in many other areas over many years. Dr Ivan Eisler, Dr Daniel Le Grange and Ms Liz Dodge for help with many aspects of the projects, including useful and informative discussions, and help with data organisation. Professor Gerald Russell, Head of the Department of Psychiatry at the time the project was carried out, for his assistance and encouragement. Paul Bassett, and Jim Jeffs, Imperial College of Science, Technology and Medicine, for statistical advice.

All children and families who agreed to participate in the study. The therapists of the clinical team, Dr Rob Senior, Ms Mireille Colahan, and Ms Catherine Crowther, Children's Department, Maudsley Hospital, for their cooperation and goodwill in collaborating with the research effort.

The Medical Research Council (U.K.) for financial support for the study.

Preface

This dissertation was based on work beginning in 1988 whilst I was a member of the eating disorders group at the Institute of Psychiatry. I was recruited as a research worker to a project led by Professor GFM Russell and Dr C Dare investigating the efficacy of family treatments for adolescent anorexia nervosa. The study investigated the progress of 40 adolescents and their families during the course of one year of family treatment. During the study, I carried out all the interviews and assessments with adolescents, parents and families described here. I scored all the interviews (using the Morgan Russell scales), most of the questionnaires and rated over 100 family interviews for expressed emotion.

The study yielded a vast amount of data. It was agreed to analyse and write up this data to address a number of questions. This dissertation is based on my own work. I carried out the reviews (chapters 2 and 3), analysed all the data reported here, and wrote the discussion. A previously published study investigating two ways of measuring expressed emotion (Hodes et al, 1999), for which I took the lead, is included here as Appendix 1 for consideration of the degree of PhD. It is relevant to the study and is referred to in the text.

From the data collected two other papers have been published, and which I co-authored. The study by Eisler et al (2000) summarises the changes that occurred during treatment and described the different effects of the two forms of family treatment. Another study (Dare et al (2000) investigated the changes that occur in the EDI subscales and related this to outcome of the adolescents.

I take responsibility for any errors that may exist in this PhD.

Matthew Hodes

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Chapter One

INTRODUCTION

Anorexia nervosa is an enigmatic disorder. Defining characteristics are a fear of fatness that leads to starvation, or other ways of controlling weight, so that weight is lost, or in children there is failure to achieve the expected weight gain (WHO 1992; APA 1994). As a result of low weight there is a characteristic endocrine disturbance manifesting as amenorrhoea in girls, or failure to enter puberty. In addition, there may be great psychological distress, and sometimes depressive disorder. The families may also be very distressed and feel helpless when faced with the sufferer's determination to reduce her weight to dangerous and frightening levels. The outcome is varied, and although about half of all those with the disorder will achieve good functioning within a few years (Steinhausen, 1997), for some the disorder becomes chronic and there is a significant mortality (Ratnasuriya et al, 1991). Against this background the need for effective treatments is apparent. This study reports the effects of participation in family treatment for forty adolescent sufferers of anorexia nervosa and their parents.

For anorexia nervosa, as for many psychiatric disorders, a vast range of treatments has been used. The earliest descriptions by Gull (1873) identified family factors associated with the disorder, and he recommended removal of the sufferer from the family. Since that time separation of the sufferer from her family for refeeding in the hospital or clinic has become a common treatment. However there are substantial problems with this approach. The problems include the reluctance of sufferers and their families to agree to this separation, the frequency of relapse following discharge, and the relatively small number of suitable facilities for this treatment option. In view of this alternative treatments have been vigorously sought for many years. There is continuing interest in biological disturbances that may underpin the disorder and offer hope of psychopharmacological therapies. Although many kinds of medication have been investigated, reviewers have reached a consensus that none have yet been shown to be clinically beneficial (Heebink & Halmi, 1995; Mayer & Walsh, 1998). Individual psychotherapeutic approaches have a long history, and originally involved psychoanalytic therapy. Evidence for benefits from this

approach using the standard criteria such as weight gain and social adjustment has been hard to obtain (Bruch 1973; Dare & Eisler, 1995; Selvini-Palazzoli, 1974). This has stimulated the search for other psychological treatments such as behavioural therapy. There is now a consensus that principles derived from behaviour therapy, particularly reinforcement programmes in ward settings can be useful (Touyz & Beumont, 1997). More recently there has been interest in cognitive therapy (Garner et al, 1997; Turk, 1993). However there have only been two randomised controlled trials (RCT) for cognitive therapy (Channon et al, 1989; Serfaty et al, 1999), and another using the related approach cognitive analytical therapy (Treasure et al, 1995), and the results are not strongly in favour of these treatments.

Strikingly more optimistic are descriptions and claims backed by empirical investigations in recent years that family therapy approaches are helpful, especially with younger patients (Dare & Eisler, 1995, 1997). Indeed, so well known have these advances in therapy and research become that anorexia nervosa has almost become a paradigmatic disorder for developments in family therapy. Family treatment is now commonly used in the U.K. and other countries as an initial approach to the therapy of children and adolescents with anorexia nervosa and related disorders.

Despite the widespread use of, and discussion about, family therapy for anorexia nervosa, especially in younger patients, there has also been scepticism. Some writers in the field of eating disorders do not appear to privilege this approach over any other (Steinhausen, 1994). It is entirely appropriate that there should be adequate evaluation of family treatments and that claims for efficacy are well supported by evidence. There are important resource implications as there are claims that this approach can reduce the need for hospitalisation (Hodas et al, 1982; Liebman et al, 1983). There are also implications for service provision and training, because offering effective family treatments outside research settings requires the dissemination of skills and knowledge.

Ever since anorexia nervosa was described in the nineteenth century, investigators have linked the occurrence of the disorder to particular constellations of family relationships (Eisler, 1995; Kog & Vandereycken, 1989). In the 1960's and 1970's there was renewed

interest in the family constellations found in association with these disorders (Bruch, 1973). An important influence was general systems theory which formed an important foundation stone for these investigators (Dare, 1985). The disorder was understood in relational perspective, in terms of the behavioural effects of the disorders on patterns of relating. This was described at the level of communication, involving short sequences of speech or behaviour (Minuchin et al, 1978), shared family belief systems or family myths (Selvini-Palazzoli, 1974; Selvini-Palazzoli et al, 1978), and also the family life cycle (Minuchin et al, 1978; Selvini-Palazzoli, 1974; Selvini-Palazzoli et al, 1978). These early formulations, heavily influenced by general systems theory, obfuscated distinctions between aetiology, the effects of the disorders on individual and family, and models and techniques useful in treatment.

There followed three lines of inquiry that were inspired by these writers. The first has been a continuation of the earlier investigations and descriptions, heavily influenced by systems theory. These writers are concerned with the family as an organisation, and the beliefs or myths that are associated with family functioning (Boscolo et al, 1987; Selvini-Palazzoli et al, 1978; Viaro, 1990). The second approach has been the increasingly rigorous investigation of particular family and interactional processes associated with anorexia nervosa. These numerous family interactional studies, being cross sectional, are limited in their contribution to understanding the aetiology of the disorder (Eisler, 1995; Hodes & Le Grange, 1993; Strober & Humphrey, 1987). They cannot disentangle the familial causes and consequences of the disorder. Nevertheless, they are valuable in understanding the experience of family members, and are relevant for understanding how therapy should be offered and its effects. The third line of inquiry has been concerned with the increasingly rigorous evaluation of the effectiveness of family treatments and processes of change described by the writers of the 1960-70s. The researchers involved in these endeavours, beginning in the 1980's, selected ingredients from well described and demonstrated family therapies and developed new, more eclectic forms of treatment for evaluation (Vandereyken et al, 1989; Dare et al, 1990; Dare & Eisler, 1995). The treatment study described here falls into the perspective established by the third line of inquiry. It is not concerned with whether the families have a causal role in the adolescents' anorexia nervosa, nor the extent to which these families are different to those in which an adolescent

has another disorder or is psychologically healthy.

Investigation of the benefits of family treatments for anorexia nervosa, and greater understanding about how the therapy works, require detailed study. It is now accepted that the randomised controlled trial (RCT) provides the gold standard for evaluating treatment efficacy (Geddes & Harrison, 1997; Chorpita et al, 1998). Ideally all RCT's for anorexia nervosa would compare one or more treatments that may include effective therapeutic elements with a neutral or 'placebo' treatment. However in the investigation of treatments for a disorder such as anorexia nervosa a number of problems occur, especially in relation to the inclusion of a placebo group. One important issue is that anorexia nervosa may be life threatening and has a high mortality, as well as a high frequency of significant adverse effects on growth and physical health. Thus as soon as family treatment was shown to be superior to supportive psychotherapy for adolescent anorexia nervosa (Russell et al, 1987), inclusion of an inactive treatment limb in future RCT's became ethically hard to justify. Furthermore it may be practically impossible to obtain and keep a no-treatment or placebo group during the course of the treatment trial. Indeed one study that attempted this by having an assessment only group, with no active treatment offered, found that most patients in this group obtained treatment from other services (Crisp et al, 1991).

In view of these considerations investigation requires comparison of two or more effective treatments. While one of these may be the established treatment, the other treatment must have some of the ingredients that are believed to be the specifically effective components. This reasoning led to the Maudsley pilot evaluation of two forms of family treatment for anorexia nervosa provided to 18 adolescents on an out-patient basis over a six month period (Le Grange et al, 1992a,b). This pilot study was successful, and showed high rates of recovery from the disorder and absence of treatment dropout. However a number of questions remained regarding the process of change and differential benefits from these kinds of treatment.

In order to investigate these questions further a larger study was carried involving 40 adolescents. This dissertation describes the changes in the individual and family relationships and treatment progress for the whole cohort. Each family was offered one of

two forms of family treatment, which shared many features. The relatively small sample size means that there is great value in looking at variation in outcome, treatment progress and dropout, and complications that may arise during the course of treatment for all 40 adolescents. The detailed nature of the study also makes it possible to try to identify predictors of change during the one year of treatment. The comparison of the two forms of family treatment is reported elsewhere (Eisler et al, 2000).

Investigation of treatment progress of a cohort of patients is a form of outcome study. There is a vast literature of the outcome of anorexia nervosa, but this has substantial limitations such as variable sample size, diagnostic instruments, follow-up periods and also sample attrition (Steinhausen, 1991, 1997). One important limitation pertinent here is the general lack of investigation of treatment effects on outcome. As Steinhausen (1997) says "The gap between treatment studies and outcome studies should be narrowed....treatment studies contain insufficient information on the long-term persistence of any intervention effects, whereas outcome studies are poor in the terms of the evaluation of treatment". The aim of this study is to reduce that gap by investigating in detail the short-term outcome of family treatment.

This report begins with a review of the family treatment of anorexia nervosa (chapter two). This chapter summarizes the salient issues in the development of family therapy for anorexia nervosa. There is a critical appraisal of relevant studies of efficacy, including the early descriptive studies, as well as the more rigorous studies such as those carried out at the Maudsley Hospital. There is discussion of the effects of treatments at individual and family level. The third chapter reviews the main findings and issues from studies of outcome. Consideration is also given to treatment dropout which is a frequently encountered, and its association with poor outcome. The fourth chapter describes the current study. It addresses the study aims, design and methods, including the selection of patients, assessment procedures, the instruments, and the two forms of family treatment provided. The results are described in chapter five beginning with the characteristics of the adolescents and their families who entered the one-year of treatment. The changes during treatment are discussed at the individual biological level with respect to weight gain, and also psychological changes over the one year of treatment are described. There is

discussion of changes in family relationships as assessed by parental expressed emotion (EE) to the adolescent patient and between the spouses. Factors associated with good and bad outcome using conventional weight, psychological and social adjustment criteria are described, as well as problems in treatment progress including dropout and the need for hospitalisation. The predictive value of parental EE and outcome is reported. Methodological issues arising from the study are discussed in chapter six. The results are discussed in relation to other treatment trials and short-term outcome studies in chapter seven. The final chapter, eight, describes implications for models of change as well as the management of anorexia nervosa. There are also suggestions for future research directions and concluding comments.

Chapter Two

REVIEW OF THE FAMILY THERAPY OF ANOREXIA NERVOSA

Introduction

This review of the family therapy of anorexia nervosa is concerned with the development of the therapy as well as evaluation of its efficacy. The early conceptualisation of the family with a sufferer of anorexia nervosa is outlined in so far as this is relevant to the actual models and techniques for therapy practice. Since the emergence of family therapy only three decades ago there have been substantial changes in therapeutic perspectives. Investigators evaluating the efficacy of family therapy for anorexia nervosa have selected specific elements and developed new family treatments. Clinicians such as Minuchin (Minuchin et al, 1978) and Martin (Martin, 1985) working in the 1970's and 1980's provided very basic data supporting their impressions of treatment benefit from open studies. Subsequent investigators have provided more rigorous evidence, and used randomised controlled trials. These treatment trials have come from three centres: The Maudsley Hospital, St George's Hospital, (both in London) and the group from Detroit, Michigan, U.S.A. This chapter provides critical appraisal of the findings from these studies.

The Influence of General Systems Theory

Bruch's observations and subtle descriptions during the 1950s and 1960's paralleled the influence of systems thinking within psychiatry that contributed to the development of family therapy (Bruch, 1973; 1978; Eisler et al, 1988; von Bertalanffy, 1968). The key features of systems theory, as applied to family therapy, including the family therapy of anorexia nervosa, have been clearly summarised (Gorell Barnes, 1985). Firstly, there is the circular, continually interacting nature of information, behaviours and ways of relating (Bateson et al, 1958; Bateson, 1973). Unlike the linear perspective, this circular view makes identification of the beginning and end of behaviours impossible. It regards the punctuation point for the beginning of a behaviour as arbitrary. Effects become inextricably merged with causes of future effects. When this model is applied to abnormal

behaviours, the distinction between aetiology and effects of disorders becomes a false dichotomy. Secondly, organisms, including humans in their social relationships, function in such a way that there is a balance between the need to change and the need to stay the same. On the one hand, there is a tendency for repetition in ways of communicating and behaving. On the other hand, changes are inevitable because of growth, ageing, procreation and rebirth. External or internal processes make maturation possible. Thirdly, the functioning of organisms, like families and other social groups, need to be understood in broad context. They are not closed systems, but are intimately connected to the environment. Within the systems perspective, context is very important in understanding functioning at all levels, such as the biological, individual psychological, or social level, and also functioning and links between these levels.

Within psychiatry, the systems perspective was initially applied to the understanding of schizophrenia (Bateson et al, 1956). This described contradictory communications, called the double bind, made simultaneously by parents to their dependent children. It was postulated that this communication style was an integral part of the disorder. Although it has been doubted since then that this communication can be identified reliably and has such specificity (Hirsch & Leff, 1976; Dare, 1985), this approach became very influential for theoretical developments in family therapy. The communications model, which referred to information emitted and perceived as a result of new behaviours, was applied to many aspects of intra-familial relationships (Watzlawick et al, 1967). Important typologies are the symmetrical and complementary patterns of relating. In the former, one person's behaviour leads to a similar response in the other person, whose behaviour in turn produces an increase in a particular behaviour of the first person. There may be an escalating pattern that can become destructive because of the rigidity and amplitude of the specified behaviours. This can become destructive, particularly when the process leads to conflict, and can result in the injury or departure of one of the parties. An alternative form of communication is the complementary style in which one communication provokes a diminution of a comparable behaviour in another, which in turn leads to further reduction in the amplitude of the behaviour from the first person. Such styles are characteristic of patterns of domination/subordination, for example those that are associated with traditional gender roles. While these forms of communication and behaviour may not have such dramatic or destructive consequences as the symmetrical

pattern, when associated with rigidity they can lead to impaired development and distress. Healthy relationships, in these terms, would consist of fluctuations in both symmetrical and complementary styles with flexibility in communication and ways of behaving.

The systems perspective has had a central role in the understanding of family relationships and the development of family therapy (Hoffman, 1981). While the innovators took up the main ideas in various ways, their intellectual ancestry is unmistakable. In recent years evaluations of family therapy for anorexia nervosa have been undertaken by clinicians who have integrated systems thinking, family therapy and key aspects of traditional research design (Wynne, 1988; Dare et al, 1990, 1995; Vandereycken et al, 1989; Vandereycken, 1995). Systems thinking have also been applied to the research process itself. This has described the continuing reciprocal influence between family therapy theory and practice, and family interaction and treatment outcomes research (Dare et al, 1990, 1995).

The Development of a Family Systems Approach to Anorexia Nervosa

The earliest writers in the field of anorexia nervosa in the nineteenth century, such as Gull, Lasague and Marce described the association of a particular constellation of family relationships with the disorder (Brumberg, 1988; Vandereycken & Van Deth, 1994). Gull had strong views about the nature of the problem and the effects of family involvement. He wrote (Gull, 1874) "The treatment required is obviously that which is fitted for persons of unsound mind. The patients should be fed at regular intervals and surrounded by persons who have moral control over them; relations and friends being generally the worst attendants". This view is recognisable in a contemporary form: something in family relationships needs to change for good outcome.

For many years psychoanalytic played a very influential role in psychological understanding of anorexia nervosa (Bruch, 1973; Brumberg, 1988; Selvini-Palazzoli, 1974). This perspective was greatly developed by Hilde Bruch by changing the focus from intra-psychic to interpersonal disturbance (Bruch, 1973, 1978, 1982, 1985). She described the association between anorexia nervosa and early childhood relationship

difficulties with mothers. It was postulated that mothers showed a lack of responsiveness to their infants' needs, especially bodily needs such as hunger. This misreading of their infants' cues led the infants to become increasingly unable to recognize and satisfy their own needs as they matured. The failure of integration of maternal affect and responsiveness is thus mirrored in the infants' lack of integration at the biological and psychological levels. It was further proposed that within a particular family constellation of general lack of emotional expressiveness, close mother-daughter relationships and distant emotionally remote fathers, there was a strong belief in their own normality. The families may have a particular investment in the psychological and cultural meanings of food. Bruch's ideas were clearly concerned with patterns of relating. She was aware of the significance of anorexia nervosa for physical and psychological development, including the way the disorder was inextricably mixed up with impaired autonomy and separation from the family. Her writing was influenced by systems theory, although others developed the clinical implications of this approach further.

Structural Family Therapy

One of the most influential approaches to the understanding and family therapy of anorexia nervosa has come from Minuchin and his colleagues, based in Philadelphia, U.S.A. A series of reports have outlined the structural family therapy approach to this and other, particularly 'psychosomatic', disorders (Minuchin et al, 1975; 1978; Minuchin & Fishman, 1981). According to this model, healthy family functioning needs to be understood in relation to appropriate organisation, or structure, which includes differentiation along generational lines. Thus, the sibling group would have its own interests, identity and ways of functioning in relation to the parents. The family group has certain executive tasks, which include caring for and nurturing the young, and the parents or other responsible adult relatives hold responsibility for this. As the offspring mature, they can assume responsibility for these tasks increasingly. They also become more involved with their peer group, and other social activities, which is a healthy adjunct to leaving home. The influence of systems thinking lies in considering the individual within a family social context, and the way in which individuals' attitudes, behaviour and identity are formed from the relationships, and establishing a difference from others. Individual family roles are understood in relational perspective, for example a mother's care towards

her children occurs because they accept it, and a child's role as conciliator occurs because others are discordant.

From the structural family therapy perspective, four key features are typically identified in the families in which a member has anorexia nervosa (Minuchin et al, 1975, 1978). The families typically show enmeshment. This refers to family members' lack of differentiation, in that they are unable to articulate and express their own needs, wishes and feelings. Family members are hyper-responsive to each others' needs, and anticipate what each other will say or do, perhaps by guessing what is in their mind. This is associated with overprotectiveness. The hyper-responsiveness is typically associated with anticipation and prevention of each others' distress. There may be over-protection from the dangers and rigours of the outside world, or from the possibility of hurt feelings and distress associated with intra-familial discord. Connected with this is the avoidance of conflict or absence of conflict resolution. It is postulated that dissatisfaction with other family members may be longstanding but not articulated, or if it is mentioned it does not lead to a new way of relating and agreement. Typically associated with this low-level persistent conflict is an invitation to the sufferer of anorexia nervosa to take sides with one parent against another. The fourth feature of this model is rigidity, which refers to the repetition and inflexibility of ways of relating and adapting to change. This is apparent at two levels. Firstly, within the short time frame, referring to sequences and styles of communication that may occur within a few minutes. Secondly, there is rigidity in the longer time frame in that the family does not adapt to individuals' biological and psychological maturation.

According to the structural family therapy perspective anorexia nervosa occurs in a family with these characteristics because of the sufferer's difficulty in communicating directly her needs and wishes, which are all constantly anticipated. The sufferer's food refusal differentiates her from parents, and perhaps siblings, without entering into conflict. The families interpret the food-refusal as an illness, rather than defiance. The visible failure of physical and psychosocial maturation that occurs with anorexia nervosa may prevent conflict developing because of family members fears that conflict would be damaging. Also, the failure of maturation associated with anorexia nervosa is associated with reduced autonomy and reduced involvement with peers and other activities outside the family. This may prevent the need for feelings of disloyalty or rejection of the parents. The

sufferer's relationship with siblings, and failure to develop autonomy and separate may mean that they will carry out these tasks and the parents will still have a 'child' at home to preoccupy them.

The structural family therapy for anorexia nervosa has different ingredients. Central features are changing the relationship and communication patterns associated with enmeshment, overprotectiveness, rigidity, conflict avoidance and involvement of the sufferer in the parental discord (Aponte & Hoffman, 1973; Minuchin et al, 1978; Sargent et al, 1985). This occurs by the therapist taking an active part in facilitating the expression of different views and wishes, which help to free the adolescent from inappropriate parental concern and involvement in their disputes. Conflict is made more open, by supporting a freer exchange of views, without guessing of what is in each others' minds. Goals of the different interventions are to change the concept of the identified patient so that family members become aware of the family difficulties, and making the anorexia nervosa an interpersonal problem (Rosman et al, 1975; Sargent et al, 1985).

Minuchin and his group have described different ways of carrying out these interventions. In some of the writings (Minuchin, 1970; Liebman et al, 1974; Rosman et al, 1975; Sargent et al, 1985), the importance of a therapeutic family lunch is stressed. This is an occasion when the family can reorganise itself around the needs of the sufferer in a new way (Rosman et al, 1975). The parents may take on responsibility for the child's eating and persuade her to eat. This would involve the strengthening of the parental sub-system and increasing their executive effectiveness. Another way involves disengaging the parent from the patient's dietary needs and leaving this for negotiation with the therapist. A third model is to neutralise the significance of eating by stimulating a discussion about other areas, altering communication style particularly between the parents and while other family members are eating the patient may start eating. The family meal may be linked to therapy for those who are admitted for inpatient treatment (Liebman et al, 1974; Liebman et al, 1983; Sargent et al, 1985). This re-establishes the patient eating with the family, and enables the therapist to carry out some of the interventions already described. This may involve the parents working together to negotiate appropriate weight gain and goals for the admission (Sargent et al, 1985).

In other publications Minuchin has given greater emphasis to the need to change ways of communicating and relating than focussing on eating (Aponte & Hoffman, 1973; Minuchin, 1984). He has indicated that the capacity for 'direct challenge in an area not related to food is a prerequisite for improvement' (Minuchin, 1984). In some accounts the family lunch does not appear very important or may not even be mentioned (Aponte & Hoffman, 1973).

Milan Systemic Family Therapy

Systems thinking has been taken up and applied in a rather different way by Selvini-Palazzoli and her colleagues (Boscolo et al, 1987; Selvini-Palazzoli, 1974; Selvini-Palazzoli et al, 1978; Selvini-Palazzoli & Viaro, 1988; Viaro, 1990). This group has been as interested in the relational perspective as Minuchin's group, but has been more concerned with the beliefs and myths shared by the family associated with problem behaviour, including anorexia nervosa. In their early work (Selvini-Palazzoli et al, 1978), they postulated that there are certain shared beliefs within the family, some of which are not overt. One important example is the covert parental discord that involves the youngster with anorexia nervosa in taking the side of one of the parents or both of the parents in an alternating fashion. The patient conforms to ideas about family loyalty and conformity. She may carry the burden for the family's need to have a sick member who does not leave home and is prepared to sacrifice herself for the overall benefit of the family. As in Minuchin's model, there is rigidity and inflexibility, which explains the fit between the disorder in which there is failure to mature and seek autonomy and the family style.

On the basis on this formulation, the therapy involved providing an interpretation, equivalent to the psychoanalytic interpretation that would make conscious the beliefs that organised family life. It was postulated that awareness of them would lead to the realisation of their absurdity or unsuitability, and hence their rejection. It was also thought that reorganising family life, by prescribing family rituals developed in accordance with the formulation could have the same effect. The rituals were intended to involve many family members, and touch on salient aspects of family life, such as separation, or eating.

Since the family members are regarded as being simultaneously trapped by the rules that constrain their behaviour, and also having the capacity for creating and accepting new rules and perceptions, they are not to be blamed for the predicament they are in. This view led to the emphasis on the positive connotation of family members' behaviours. By indicating the positive aspects of behaviours that may also be seen, following the intervention, as absurd and undesirable, the attention and involvement of the family could be maintained (Selvini-Palazzoli et al, 1978).

The Milan team established a particular view about how to work with the family. They said that to take into account the therapists' involvement with the family, and to facilitate understanding about how the family worked, it was desirable to have two therapists with the family and two viewing the interview. This was consistent with their systems view about the importance of the connectedness of processes, including the links between the symptom, the family, the referring person and the network (Selvini-Palazzoli et al, 1980). The stance of the therapist should be 'neutral' so that a coalition does not develop between the therapist and any particular family member. All family members are asked questions, which enables the therapist to explore all views and be seen not to side with any particular individual family member. An important aid to neutrality, and a way of eliciting the family members' beliefs, is circular questioning (Selvini-Palazzoli et al, 1980). This involves asking how a family member thinks another family member sees relationships or problems. Using this technique, comparison can be made between family members (Tomm, 1988). Since all family members can be included and are expected to listen to each other, it can help differentiate individuals. Instructions or directives are not usually given in the sessions.

Selvini-Palazzoli and her immediate colleagues went on to develop a very different way of describing family functioning where there was severe psychopathology in one family member (Selvini Palazzoli & Viaro, 1988; Viaro, 1990). Explanation was expressed in terms of psychotic games in which members were developing strategies for maximising their gain. The language was couched in terms of calculating, belligerent individuals, maximising their emotional interests. The interventions show some differences to those described in their earlier works, and involve an exploration of relationships with a view to changing the fixed, maladaptive strategies used in the psychotic games, so that the

patient acquires new behavioural tactics. Treatment continues as long as the therapist is able to 'suggest alternatives to the patient's way of interacting with her family' (Viaro, 1990). Rather curiously, treatment should be suspended 'if the patient experiences a relapse of her condition' (Viaro, 1990).

Strategic Family Therapy

Central aspects of this approach are the reframing of an individual's undesirable behaviour so that it takes on a new meaning (Haley, 1976; Madanes, 1981). The behaviour may then be prescribed, so that it can be controlled and eventually given up, perhaps by substitution for another behaviour that will have the same function. Such interventions might include prescription of behaviours, in a way that resembles exposure in behaviour therapy. One difference between strategic and behaviour therapy, apart from the reframing, is the emphasis on symptom control, understood from the point of view of resistance to change. Thus it would be routine to use paradoxical injunctions to increase the feeling of control by the sufferer, and help the person to give it up. The approach is influenced by the structural family therapy perspective in that implicit in strategic therapy is an understanding of family organisation, hierarchy and power.

Behavioural and Multimodal Therapy

The influence of learning theory has been considerable for inpatient management of anorexia nervosa, especially reinforcement for weight restoration (Halmi, 1985; Knibbs, 1993; Touyz & Beumont, 1997). These principles can be integrated with family treatment approaches (Sargent et al, 1985). Parents may take on the role of the hospital ward nurses and use operant conditioning to ensure weight gain. From the perspective of structural family therapy, this involves strengthening the parental executive subsystem, and is an acknowledged ingredient of structural therapy (Liebman et al, 1974). Garner (1988) gives details of how such therapy can be developed by describing the therapy of a thirteen-year-old girl with anorexia nervosa. The parents were heavily involved in the management of food intake. They took charge of how much she would eat within the context of a behavioural programme, which had characteristic features. The therapist used a directive manner for evaluation and monitoring, eliciting of problem areas

including cognitive distortions, psychoeducation and setting up targets for change.

Behaviour therapy for anorexia nervosa may be expanded to include many structural family therapy principles. An important example, because it comes from one of the few therapy evaluation studies, concerns behavioural family systems therapy (Robin et al, 1994, 1999). In this treatment, the identified patient and parents were involved in all sessions and the siblings occasionally. Initially the parents were asked to work together and take control of their daughter's eating and weight gain. They were coached in implementing a behavioural programme. In the next phase, the therapist shifted the focus to address the cognitive distortions and family structure. Nutritional counselling and cognitive restructuring were provided.

It is also possible to offer multimodal therapy in which each problem area is targeted and appropriate intervention developed (Lazarus, 1981). A useful example is provided by Fundudis regarding a twelve year old girl with anorexia nervosa (Fundudis, 1986). Given the abnormalities of affect, cognition, and family and social functioning, typical of the condition, a complex package of interventions based on behavioural and cognitive behavioural principles was offered. Pertinent here was the inclusion of family therapy to address family relationship difficulties and social anxieties.

Eclectic Family Therapy Approaches

One very important influence in the development of family therapy was psychoanalysis (Dare, 1979, 1985; Eisler et al, 1988; Hoffman 1981). The earlier therapists used psychoanalytic models for their understanding of intra-familial dynamics. Especially important was the idea that the oedipal constellation, although existing at the level of fantasy in individuals, may be manifested in actual cross-generational relationships. Addressing these unstable alliances would have therapeutic benefits, by increasing autonomy, individuation and strengthening relationships with generations (Boszormenyi-Nagy & Spark, 1973; Bowen, 1978). These early formulations contributed to the development of transgenerational approaches, but were not used for the treatment of anorexia nervosa initially. Similar ideas were used in Germany in the early 1970's for the treatment of anorexia nervosa (Vanderlinden & Vandereycken, 1989).

Later therapists, including the Milan group, described the shared meanings and values that might be associated with inter-generational transmission and maintain fixed patterns of organisation (Selvini Palazzoli et al, 1978; White, 1983). These ideas have been further developed and applied in the understanding and therapy of anorexia nervosa. Prominent amongst this group has been the Heidelberg therapists, led by Stierlin (Stierlin, 1981; Stierlin & Weber, 1987; Stierlin & Weber, 1989). They emphasised the relevance of certain aspects of family functioning in anorexia nervosa. These include closeness, similar to the enmeshment of structural family therapy, in which there is 'related individuation', with weak and fragile internal family boundaries and rigid exclusion of the world beyond. The individual with anorexia nervosa may be delegated to follow certain family beliefs or assume particular roles, for example becoming and remaining the responsible, successful student. These expectations may be transmitted over several generations. Other patterns and rules may be manifest over several generations. These are often associated with rivalry between sisters. One sister may feel herself unjustly treated or regarded by the parents. Angry or envious feelings associated with this are neither perceived nor expressed.

Another form of eclectic approach is that developed by Andolfi and his colleagues (Andolfi et al, 1983). This involves an integration of concepts and strategies from structural, strategic, the Milan systemic therapy and the experiential teachings of Whitaker. The therapist may alternate between these different stances, between an active provocative style or strategic denial. These techniques have been discussed specifically in relation to anorexia nervosa (Andolfi et al, 1983).

Since the 1980's there has been growing recognition of the importance of cultural and gender issues in understanding eating disorders. Cultural issues, in terms of prevailing societal attitudes regarding the desirability of a slim body shape for women, have been recognised and their relevance for family therapy described (Dare, 1983; Selvini Palazzoli, 1985). Within particular cultures, food and eating may play a more prominent part than in other cultures. Furthermore, in certain families eating and food may have particular salience as an idiom for caring and an aspect of identity. This may be true for example, when the parents work in the food industry, perhaps as cooks, so that their

parental and professional roles are mutually reinforcing.

Gender issues have become more important in understanding the development of eating disorders in the last decade (Striegel-Moore, 1993). They have been encompassed by individual, psychodynamically oriented approaches (Orbach, 1978). They have also been included in family approaches to the therapy of anorexia nervosa (Edwards, 1987). They have highlighted the way that the formulations made by family therapists have embedded within them inequalities of power that are oppressive to women and pathologise women's socially sanctioned gender roles. Feminist family therapy of anorexia nervosa would include these perspectives within its practise.

Family Treatments in Research Settings

Two groups of workers who have been involved in both research and treatment of eating disorders have developed eclectic family therapy approaches. These therapy approaches will be described in turn.

The group at the Maudsley Hospital, London have described their family treatments in a series of studies into psychological treatment evaluation for anorexia nervosa. Accounts describe an approach to family therapy that includes many elements from structural, Milan systemic and behavioural family therapy (Dare, 1983; Russell et al, 1987; Dare & Szmukler, 1991; Dare & Eisler, 1995). They have emphasised a number of elements, summarised here, that represent important additions to the previous literature. Firstly, in view of the dramatic finding regarding the effectiveness of family therapy for younger patients (those aged under 18 years, with illness duration less than three years), compared with its lesser effectiveness for older patients, life cycle issues are stressed (Dare et al, 1990). It has been postulated that at earlier stages in the family life cycle, when the children are younger, and have not left home, it is easier for parents to take on the task of supervising their eating. This is one of the tasks that all parents are involved in regarding pre-school children, so resuming it is easier with younger children who will resist parental endeavours less than older sufferers. This suggests that psychological therapies need to be offered on the basis of life cycle stage, an idea not apparent in much of the family therapy writing that tends to be rather lacking in specificity regarding

identification of suitable families.

The second important contribution of the Maudsley group to family therapy links family interaction with progress in family therapy (discussed below). Using the instrument expressed emotion, the group found that high levels of criticism from parents towards the sufferer with anorexia nervosa was associated with poor progress in therapy (Le Grange et al, 1992a) and increased risk of dropout (Szmukler et al, 1985). The interpretation of this was that criticism reflects parental stress, coping, and guilt and that facilitating good progress would require reducing conflict, which is reflected in the measure. This is a radical departure from the approach of Minuchin and his group who suggested that the families in which an individual had anorexia nervosa avoided conflict, and if present it tended to persist. According to this view therapy would alter the pattern of relating by increasing conflict, and one way this might occur was during the therapeutic family meal. The therapeutic family meal was an important part of the structural family therapy approach.

The third contribution of the Maudsley group was to describe the three stages of family therapy. The stages identified were the crisis stage in which weight gain was paramount and parents needed to take charge of the eating, or extricate themselves from this for older patients. The second stage occurs when control for the eating could be gradually handed back to the improving patient, and the third and final stage when other relationship and social developmental issues could be discussed (Dare et al, 1990).

Finally, the Maudsley group has questioned whether traditional conjoint family therapy, involving all family members, is required. It was proposed that the stages of therapy described above could be followed when the family members were not seen together. In view of the wish to reduce conflict and confrontation, a form of therapy called separated family therapy (referred to as counselling in some previous publications, Le Grange et al, 1992a,b; Dare et al, 1995) was developed. In this therapy parents and adolescents were seen separately but by the same therapist (Le Grange et al, 1992a, 1992b; Eisler et al, 2000). This approach included various ingredients derived from structural family therapy, the Milan approach especially positive connotation to reduce blame, nutritional counselling where appropriate, and exploration of the adolescents' concerns and

relationships. This therapy had the same stages as conjoint family therapy, with the focus for parents initially on supervising their daughters' eating, responsibility for this gradually passing back to her and increasing discussion of relationship and maturational issues.

These developments paralleled the pragmatic approach of Vandereycken and his colleagues (Vandereycken et al, 1989). They described two aspects of family therapy in detail, one of which was particularly pertinent to the separated family therapy described by the Maudsley group. They advocated the need for a hierarchical model of therapy in which there was progress according to the complexity of the problem and the relationship difficulties (Perednia et al, 1989). It was proposed that for simpler cases of anorexia nervosa, in which there were not complex or intransigent relationship problems, counselling would be adequate. This would involve counselling and nutritional guidance for the parents and discussion of parenting, with variable involvement of the patient and her siblings. For more complex situations, for example involving high levels of discord or intergenerational issues, conjoint family therapy would be offered. At the third level, perhaps in addition to therapies at the lower levels, marital therapy could be offered. At the highest level is located individual psychological therapy, which again could be offered in conjunction with therapies at a lower level.

A second important area described by Vandereycken's group concerns the importance of single parent and reconstituted families and the special difficulties they might have in therapy (Vanderlinden et al, 1989). These include the significance that the dead or separate parent might have for the family. In addition, the sufferer of the eating disorder often functions as an intermediary between the parents. The family may have become chaotic with disturbed boundaries. The implications for therapy are the importance of providing extra support to the single parent family and encouraging clear intergenerational boundaries. It may be necessary to deal with unresolved marital issues, grief and mourning.

Evaluation of Family Therapy for Anorexia Nervosa

i) Descriptive Studies

The family therapists from the 1960s and 1970's working with patients who had anorexia nervosa had the strong conviction that their treatments were effective. The Milan systemic family therapists have only produced clinical case descriptions regarding their patients and the changes they made (Selvini Palazzoli et al, 1978; Boscolo et al, 1987; Selvini Palazzoli & Viaro, 1988). The only quantitative data described is weight change, obtained by the therapist. A similar lack of detail is provided by the strategic and transgenerational therapists (Andolfi, 1981; Madanes, 1981; Papp, 1980, 1983; White, 1983). It is of course impossible to evaluate the claims made by these groups regarding efficacy.

There are a small number of reports of the effects of family treatments using an open design. These are summarized in Table 2.1. The kinds of family therapy used by Minuchin and his colleagues, and Stierlin and Weber, have been described above. Martin (1983, 1985) used structural family therapy, and twelve of the subjects in her study also received individual psychotherapy. These reports suggest that family therapy was an effective treatment that led to weight gain and other improvements. Minuchin's studies suggest improvement in many aspects of functioning such as mood and social adjustment, but it is unclear how these areas were assessed.

It is difficult to compare these studies because of differences in sample characteristics, lack of clarity about the diagnostic criteria, the treatments offered, and variation in the measures of change. They lack control or comparison groups so it is unclear whether intervention is better than inactive therapy or remaining on a waiting list. There is heterogeneity of treatments offered including variable proportions of adolescents who had received in-patient treatment. The therapists, without independent assessments of change report all of the data. The studies of Minuchin and his group are particularly weak in the measures used to assess change, although none of the writers have used standardised instruments. Particularly important here is the absence of adequate measures of change of family interaction and function during the course of therapy.

Table 2.1 DESCRIPTIVE STUDIES OF THE FAMILY THERAPY OF ANOREXIA NERVOSA

Authors	Sample Size	Age years (range) at entry to treatment	Clinical Features	Treatment Duration Months mean	Treatment Components	Re-assessment interval Outcome
Minuchin et al 1978	53	14.5 median (9-21)	weight loss 30% than healthy weight		All had structural FT	86% recovery 4% improved 10% unchanged
Martin, 1983, 1985.	25	14.9 mean	18 restricting AN 22 amenorrhoea	11	All had weekly FT 12 ind psychotherapy 18 IP treatment	2.5-6.7 years. 45% at or over 90% ideal weight; 10 had normal eating
Stierlin & Weber, 1989	42	18.2 mean	36 <45kg., 11 < 35 kg. 35 amenorrhoea	8.7	6 (mean) family sessions	4.5 years 21 weight gain, mean 2.5 kg 20 disturbed eating 31 amenorrhoea

Abbreviations: FT: family therapy; ind: individual; AN: anorexia nervosa

ii) Controlled Trials

There are six published controlled trials that include family therapy in various forms. The main features have been summarized in Table 2.2, organized according to the research group that carried out the studies. All studies were carried out in London, apart from that by Robin and colleagues (1999), who were based in Detroit, Michigan, U.S.A.

The five London based studies all used interview measures of eating behaviours, attitudes, mood and psychosocial adjustment using the Morgan Russell scales (Morgan & Russell, 1975; Morgan & Hayward, 1988). In addition the Maudsley studies included measures of parental expressed emotion, and for the studies with adolescents these measures were carried out during therapy to assess change (Le Grange et al, 1992 a; Eisler et al, 2000).

The studies all had random allocation to outpatient treatments. However there was great variation in the treatment components offered. The St George's studies included many components of treatments, and family therapy was offered with psychodynamic psychotherapy. For the Crisp et al study (1991), the group receiving outpatient psychotherapy received a combination of family therapy, psychodynamic psychotherapy and dietary counselling. This aimed to address the perceived difficulty in dealing with maturational issues, an avoidance of the stresses associated with pubertal development and the implications for psychosocial development. In the Maudsley (Le Grange et al, 1992a,b; Russell et al, 1987; Eisler et al, 2000) and Detroit studies (Robin et al, 1994; 1999) the types of therapy are more clearly distinguished, as an important research goal in these studies being to elucidate the effective components of therapy. The details of the therapy have been described above (Dare et al, 1990; Dare and Szmulker, 1991; Le Grange et al 1992a,b; Robin et al, 1994, 1999; Russell et al, 1987). The studies varied in the use of in-patient treatments. In the Crisp et al (1991) study one treatment option was in-patient treatment. In the Russell et al (1987) study all patients had been admitted for weight restoration and then allocated to one of two kinds of outpatient treatments. The alternative treatment was individual psychotherapy that was supportive, educational and

Table 2.2 CONTROLLED STUDIES OF FAMILY TREATMENT FOR ANOREXIA NERVOSA

Research Centre Authors	Sample	Age years (range) at entry to trial	Measures of change	Treatment	End of Treatment Outcome and FU
<i>St George's</i> Hall & Crisp, 1987	30 All <85% MPMW All amenorrhoea	19.5 13-27	weight MR scales CCEI	All OP 1) 12 sessions PFT 2) 12 sessions dietary	Weight:no difference groups. Only dietary group > baseline MR changes only reported at 1 year FU, PFT >dietary on social and sexual adjustment
Crisp et al, 1991 Gowers et al, 1994	90 AN DSM IIIR	22	weight MR scales	1) IP 2) 12 sessions PFT + 4 sessions dietary 3) 10 sessions group + 4 sessions dietary 4) Assessment only	All treatment groups > 4. Similar changes 1,2,3. Poor compliance all groups. 2 year FU, group3>group 4 on weight, & socioeconomic functioning

Abbreviations: AN : anorexia nervosa; OP: outpatient; FU: follow up; MPMW: matched population mean weight; MR: Morgan Russell scales; CCEI Crown Crisp Experiential Index; PFT: psychodynamic and family therapy; Dietary: dietary counselling. PFT: psychodynamic and family therapy.

Table 2.2 CONTROLLED STUDIES OF FAMILY TREATMENT FOR ANOREXIA NERVOSA (contd)

Research Centre Authors	Sample	Age years (SD) at entry to trial	Measures of change	Treatment	End of Treatment Outcome and Follow up
<i>Maudsley</i>					
Russell et al, 1987 Eisler et al, 1997	80 DSM III: 1) 21 EOSH 2) 15 EOLH 3) 21 LO 4) 23 ANBT	21.8 (7.1) 16.6 (1.7) 20.6 (4.0) 27.7 (7.8) 24.0 (8.4)	weight MR scales CCEI	All IP for weight restoration. Then RA to 1 year of: 1) family therapy 2) individual	According to groups: 1) For weight and all MR subscales (except mental state) family therapy > individual. Benefit FT at 5 year FU. 2) Generally poor outcome, no treatment diff. 3) Generally poor outcome, no treatment diff. 4) Generally poor outcome, no treatment diff. 5 year FU, no treatment diff for groups 2, 4. 5 year FU, individual > family therapy for group 3.
Le Grange et al, 1992a, b.	18 DSM IIIR	15.3 (1.8) 12-17	weight MR scales EE, FACES	All OP, RA to 32 weeks of: 1) conjoint family therapy 2) separated family therapy	Significant improvement all measures, good outcome associated with better family function. No differences between treatments.
Dare et al, 2000 Eisler et al, 2000	40 ICD 10	15.5 (1.6) 11-17	weight MR scales EE, FACES EAT, EDI, MFQ	All OP, RA to 52 weeks of: 1) conjoint family therapy 2) separated family therapy	Significant improvement in all measures of adolescent and family function. Conjoint therapy greater improvement depression, interpersonal mistrust. Separated therapy greater improvement weight gain for high EE families.

Abbreviations: EOSH: early onset short history; EOLH: early onset long history; LO: late onset; ANBT: bulimia nervosa of low weight. MR: Morgan Russell scales; CCEI Crown Crisp Experiential Index; EE: expressed emotion; FACES: Family Adaptability and Cohesion Evaluation Scale; EAT: Eating Attitudes Test; EDI: Eating Disorders inventory; MFQ: Mood and Feelings Questionnaire; IP: inpatient; OP: out-patient; RA: random allocation.

Table 2.2 CONTROLLED STUDIES OF FAMILY TREATMENT FOR ANOREXIA NERVOSA (contd)

Research Centre Authors	Sample	Age years (SD) at entry to trial	Measures of change	Treatment	End of Treatment Outcome and Follow up
<i>Detroit</i> Robin et al, 1994 1999	37 DSM IIIR	12-20	weight EAT, BSQ, EDI, BDI, PARQ	IP for weight restoration if <75% healthy weight., RA to: 1) BFST 2) EOIT	Weight: BFST > EOIT. Eat attitudes, mood, family relationships, improved, no treatment differences.

Abbreviations: EAT: Eating Attitudes Test; BSQ: Body Shape Questionnaire; BDI: Beck Depression Inventory; PARQ: Parent Adolescent Relationship Questionnaire; IP: inpatient; RA: random allocation; BFST: behavioral family systems therapy; EOIT: ego-oriented individual therapy.

problem-centred with elements of cognitive, interpretive and strategic therapies (Russell et al, 1987). Although the aim of the Robin et al (1994; 1999) study was to compare two active out-patient psychological treatments, eight patients had been admitted prior to this to increase weight to 80% of health weight.

Regarding the results of the controlled trials, the first St George's study (Hall & Crisp, 1987) suggested that while both dietary counseling and a combination of individual psychodynamic and family therapy were beneficial, there were slightly differential benefits from these therapies. Thus the group receiving dietary counseling achieved more weight gain, the other group achieved more improvement in social and psychosexual functioning. The authors explain that the apparent superiority of dietary counseling occurred because three patients in the psychotherapy group lost weight.

The second St George's study, carried out largely with adults, found that the three groups that received active treatment made comparable gains and did significantly better than the no treatment group in terms of both weight gain and the areas measured by the Morgan Russell scales (Crisp et al, 1991). A serious problem in interpreting the significance of family therapy from the St Georges' studies is that it was offered with other treatments.

The first Maudsley study (Russell et al, 1987) found that family therapy was more effective than individual psychotherapy for the younger age group, with illness duration less than 3 years. Of this group six out of ten patients receiving family therapy achieved good outcome, defined as reaching weight of 85% average body weight and menstruating normally, while only one out of ten receiving individual psychotherapy achieved this outcome. There were also significant differences in menstrual function, psychosexual adjustment, and socioeconomic status measured by the Morgan Russell scales. There was a finding that individual psychotherapy was significantly better than family therapy for older patients, those with a mean age of 27.7 (s.d. 7.8) years who entered the trial, for weight gain. However overall this group tended to do badly, only a small number achieving good outcome regardless of treatment.

The Maudsley pilot study of family treatments for adolescent anorexia nervosa included

two active interventions (Le Grange et al, 1992a,b). The interventions were conjoint and separated family treatments (described previously, this chapter). The sufferers initially had mean weight of 77.9% of average body weight (ABW, or weight corrected for height and age) and reached 94.1% ABW after receiving either conjoint family therapy or separated family therapy. There were also improvement in Morgan Russell scores, eating attitudes and self-esteem. In both treatment groups levels of parental criticism towards the adolescent with anorexia nervosa diminished in association with good progress (Le Grange et al, 1992a). The FACES questionnaire, which measures family members' views about family cohesion and adaptability, suggested that there was less dissatisfaction with family relationships after treatment.

The main study of family treatment for adolescent anorexia nervosa was developed from the pilot study and also compared separated and conjoint family therapy (Eisler et al, 2000). Treatments were provided for 40 adolescents over one year. This study found significant improvements in both treatment groups. There were also some differences between treatment groups. Those adolescents with anorexia nervosa having conjoint family therapy obtained greater improvement in mental state and depression than those having separated family therapy. However the adolescents having separated family therapy achieved greater weight gain in those families in which there was a high level of parental critical comments to the adolescents (defined as greater than two in the semi-structured standardised interview). There was also an interesting finding regarding the change of ineffectiveness and interpersonal distrust that decreased only for the adolescents having conjoint family therapy (Dare et al 2000). It was suggested that this occurred because of the ability of adolescents and their families to negotiate different ways of relating that promoted greater autonomy and trust.

The Detroit study compared ego oriented individual psychotherapy with behavioural family systems therapy (Robin et al, 1994; 1999). It was found that the family therapy achieved greater weight gain in adolescents, with comparable gains in mood, body shape concerns and family relationships. Individual psychotherapy could not be shown to be preferable in any way.

Appraisal of Controlled Trials of Family Therapy for Anorexia Nervosa

There are a number of tentative conclusions that emerge by looking across these studies. Firstly, family therapy is a much more effective intervention than no treatment or individual psychotherapy, for younger patients (Crisp et al, 1991; Russell et al, 1987). The position with regard to adults (those aged over eighteen years) with anorexia nervosa is less clear. The combination of short illness duration, i.e. less than three years and younger age together appear to be associated with better treatment response.

Secondly, the kinds of family treatments that have been shown to be effective include a focus on eating and weight gain. The early stages of intervention typically include elements of psychoeducation regarding the disorder and nutritional counselling. Parents are empowered to use their authority and supervise their daughters' eating, or to create a change in the way they relate around eating that will allow the sufferer to change. Later in therapy there may be consideration of developmental and relationship issues. In view of the nature of the disorder treatment requires the inclusion of some dietary counselling as well as addressing relationship issues (Crisp et al, 1991; Gowers et al, 1994; Le Grange et al, 1992b; Robin et al, 1994; Russell et al, 1987)

Thirdly, progress in treatment is associated with improvement in family relationships, such as reduced discord and dissatisfaction (Crisp et al, 1991; Eisler et al, 2000; Le Grange et al, 1992b; Robin et al, 1994; Russell et al, 1987). There is little evidence that focussing on relationships is associated with greater improvement in this area compared with focussing on eating and weight gain (Robin et al, 1994, 1999). This occurs despite the increased involvement that parents have in feeding their starving offspring, and tensions that may be associated with this.

Fourthly, there is a suggestion from the Eisler et al study (2000) that there are differential treatment gains, comparing conjoint and separated family therapy. Specifically, there was a finding that for critical families, separated family therapy is preferable. However, there may be greater improvement in interpersonal trust and ineffectiveness in the conjoint family therapy group (Dare et al, 2000).

Finally, all the studies have shown that where therapy is effective, there are usually gains even in areas that are not specifically targeted. For example, there are improvements in eating attitudes, mood, family relationships and social adjustment including work, peer relationships and attitudes to sexuality.

Although these research studies represent considerable advances, they have a number of limitations, apparent when considering them against the ideal standards for treatment trials. The most important include small sample sizes, accentuated by variable levels of dropout. There was a general lack of measures of change of individual psychopathology and family interaction and attitudes. As against recommendations, (Anderson, 1988) only two studies included measures based on both assessment by interview and self-report by the adolescent and family (Eisler et al, 2000; Le Grange et al, 1992a,b). Generally there was little exploration about what led to therapy dropout, or adverse outcomes for the adolescent or family. They did not measure therapy satisfaction, and examine family members perceptions about what they thought were effective ingredients of therapy.

Only the Russell et al (1987) used the same therapies and methodology to investigate the younger and older groups. There is also variation in the way that therapy consistency was maintained. The Maudsley group dealt with this by having small numbers of therapists, with one supervisor for each treatment modality. The Detroit study (Robin et al, 1994, 1999) reported therapy fidelity checks which suggested adequate levels of consistency, (they were high for the behavioural family treatment and somewhat lower for the psychodynamic psychotherapy, Cronbach's alpha .84 and .66. The Crisp et al (1991) study did not comment on this, but this may not matter since these investigators' intentions was to offer eclectic therapy.

The Maudsley and St George's treatment studies have been carried out in specialist eating disorder services that attract patients from the south of England. This has meant that the study samples are likely to include a greater proportion of more patients with greater difficulties, in terms of illness duration and severity, and family relationship difficulties, as compared to those who are treated in general mental health services. Furthermore, as the Maudsley's programme of treatment studies progressed (Dare et al, 1995), the recruitment of patients and families changed (see chapter six). In view of this

caution is needed in generalising the results, and applying them to other populations. Recruitment to treatment studies for anorexia nervosa involves a variety of referral and selection processes. In view of the relative rarity of anorexia nervosa and the immense difficulties that would occur in carrying out a treatment study with a total community based population, this limitation is likely to remain for the foreseeable future. The issue can be best dealt with by obtaining adequate data about background characteristics of the samples recruited. The Crisp et al, (1991) study is rather weak in this respect.

A further issue for the studies is the length of treatment provided and the duration of follow-up. Follow-up is important given the demonstration in a number of sound psychological treatment studies for other problems that benefits may increase over time (Fairburn et al, 1993). Apparently impressive gains during treatments may be lost soon after their termination. The Crisp et al (1991) study was illustrative in finding that in-patient treatment produces more rapid improvement than outpatient psychological treatments, but this advantage is not sustained, and at one year outcome is similar. Two-year follow-up of the group from that study who received outpatient eclectic psychotherapy showed that benefits occurred well beyond the treatment period. The Maudsley group has published five year follow-up data regarding the benefits of family therapy compared with supportive psychotherapy, and the benefits of family therapy were sustained for the early onset short history group (Eisler et al, 1997). Interestingly, for the older patients the individual therapy group had greater benefit for some areas of functioning than family therapy.

A final issue concerns the relationship between family therapy thinking and practice, and therapy evaluation. It has been indicated that there is a cross-fertilisation between these areas, and research studies have led to modification of the family therapy practice (Dare et al, 1995; Eisler, 1993). As research progresses so the kinds of treatments that are offered will constantly change. This makes replication and close comparison between studies difficult.

Conclusion

The models of treatment by the early family therapists have prompted the carrying out of

randomised controlled trials. These trials have demonstrated the efficacy of directive family oriented approaches with regard to weight gain and improvement of many other aspects of adolescents functioning. However the evaluation of the earlier family therapy approaches have paradoxically made it possible to question many of the assumptions that these earlier therapists made. These include the idea that it is necessary to aim to alter family interaction for the disorder to improve, that families' myths or beliefs need to change at the outset of treatment, or that specific techniques such as the family meal are required. Against predictions from structural family therapy, research findings suggest that keeping families engaged in treatment with minimum of conflict is associated with improved outcome.

The improvement in many aspects of functioning with family treatments (Dare et al, 2000; Eisler et al, 2000; Le Grange et al, 1992a,b) suggest that multimodal psychotherapies, or concurrent therapies, are not necessary routinely. Vandereycken's conceptualisation of a tiered system of psychological treatment delivery would seem to be complementary with these findings, (although the benefits of the upper tiers in his approach, marital and psychodynamic psychotherapy are unclear). However, the range and extent of difficulties that may be persistent, in terms of sufferers' psychopathology and family interaction is unclear. Furthermore, there is a relative absence of studies of what changes in the family during therapy. These areas of uncertainty and the challenges to previously held models of change are discussed in subsequent chapters.

Chapter Three

THE SHORT TERM OUTCOME OF ADOLESCENT ANOREXIA NERVOSA

Introduction: From Treatment Response to Outcome

The aim of treatment for anorexia nervosa is of course to improve weight and psychological functioning and reduce distress with a view to long term benefit. The rationale for offering treatment is that improvement or recovery is more likely to occur than if there is no intervention. The hope is that treatment will modify the natural history of the disorder. The focus in this chapter is in linking perspectives from treatment and outcome research. The salient areas for investigation are:

1. The changes and impairments associated with the natural course of the disorder.
2. Family predictors of treatment response and outcome.
3. The effect of non-participation in treatment on outcome.

The chapter is organised according to these three topics.

1 Natural Course of Anorexia Nervosa

There is a very large literature on the outcome of anorexia nervosa. By 1998, one reviewer was able to identify over 150 long-term studies of outcome (Pike, 1998) and more have been published since (Steinhausen, 1999). This large literature is of very variable quality and so many of the studies are hard to interpret. Fewer studies have been carried out specifically with the adolescent age group (Steinhausen, 1997), but these will be the focus for this brief discussion.

1. Methodological Issues

All reviewers have commented on the variable quality of the studies (Pike, 1998; Steinhausen, et al, 1991; Steinhausen, 1997). Problems include the use of various outcome measures, although increasingly the Morgan Russell Outcome Scales are used. Few studies have standardised measures of psychiatric disorder, and most are retrospective. Many will have been carried out in specialist centres, giving rise to considerable selection bias with the exception of the population based studies carried out in Goteborg (Gillberg et al, 1994; Rastam et al, 1995). The length of follow-up is often not clearly specified. In a number of studies conclusions are

jeopardised by a relatively high dropout rate at follow-up (on average 16%, Steinhausen, 1997).

2. *Findings*

The overall findings from 31 studies involving 798 patients are that full recovery occurs for 52%, 29% show some improvement, and 19% develop a chronic course (Steinhausen, 1997). There appears to be a better outcome for those with younger onset than for adult onset, although pre-menarchal onset may be a poor prognostic indicator. Long duration of symptoms, and greater weight loss, vomiting, bulimia and purgative abuse are associated with poorer outcome (Steinhausen, 1999).

One high quality study that avoided many of the methodological shortcomings of the previous studies deserves to be singled out. This is the naturalistic, prospective study of 95 adolescents who had been admitted for weight restoration and received a comprehensive treatment package, and who were assessed semi-annually for 10-15 years (Strober et al, 1997). It was found that 76% met criteria for full recovery, which meant that they had been free from all criterion symptoms of anorexia nervosa for at least 8 weeks. Among restricting anorectics 30% had developed binge eating within 5 years of involvement in the treatment programme.

The population based study from Goteborg found that 47% of sufferers of anorexia nervosa had recovered, 39% were improved and 14% static or worse 6 years after identification at age 15 years (Gillberg et al, 1994). Amongst this group of subjects there were high rates of comorbid psychiatric problems at six year follow-up (Rastam et al (1995). There were high rates of affective and anxiety disorders particularly obsessive-compulsive disorders initially and throughout the six year period.

Clinic based studies have also found high levels of comorbidity with anorexia nervosa especially for depression (Herzog et al, 1992; Herpetz-Dahlmann & Remschmidt, 1993a). There is continuity of depression which is associated with the severity of anorexia nervosa (Herpetz-Dahlmann & Remschmidt, 1993b). However there is inconsistency regarding the prognostic relevance of depression, with one study suggesting an association with poor treatment response (Steiner et al, 1990) while others did not find this association (Herpetz-Dahlmann et al, 1995; Herzog et al, 1993). There is also frequent comorbidity of anxiety disorders

including obsessive-compulsive with anorexia nervosa. However the continuity and prognostic significance of obsessive compulsive disorder is unclear.

Effect of Treatment on Outcome

Only one of the naturalistic outcome studies has addressed the links between treatment uptake and outcome specifically. This was the population based study from Goteborg which showed no association between participation in treatment (which varied in type and intensity) and outcome (Gillberg et al, 1994). In the other studies the range of treatments provided and variable treatment uptake are not analysed as separate predictors of outcome. Treatment effects have been investigated by short-intermediate term follow-up of controlled trials (see table 2.2). The Maudsley group showed that there was sustained benefit of family therapy over individual therapy for adolescents at 5 year follow-up (Eisler et al, 1997). Similarly the St George's group showed that at two year follow-up for young adults (mean age 21 years) the benefits of combined family/individual psychotherapy were sustained over offering assessment only (Gowers et al, 1994).

2 Family Factors, Treatment Response and Outcome

Early studies of outcome of anorexia nervosa suggested that family factors were relevant. Morgan & Russell (1975) found that at four-year follow-up of 41 patients more disturbed family relationships with the patient were associated with poor outcome. A study of younger patients, mean age at onset 11.7 years, with a mean follow-up of 7.2 years, suggested that family structure was relevant (Bryant-Waugh et al, 1988). Thus children from single parent families, in which one or both parents had been married before, and families in which several generations lived together had a poor prognosis. These early studies had adequate measures of outcome but weak measures of family function. This meant that it was not possible to infer the qualities of relationships that were associated with outcome. Furthermore such data could not be used to improve treatment by targeting specific aspects of interaction.

During this decade a number of studies have been carried out that overcame these weaknesses. The six studies are summarised in table 3.1. All of them are prospective studies concerned with adolescents with anorexia nervosa. They have reliable and valid measures of outcome and also family interaction. Two have used expressed emotion, although it was assessed in different ways. The Maudsley

Table 3.1 FAMILY FACTORS AND TREATMENT OUTCOME IN ADOLESCENT ANOREXIA NERVOSA

Authors	Sample	Age years (SD) (range) at entry to treatment	Treatment	Measures of Family Function	Findings
<i>Maudsley Studies</i>					
Le Grange et al 1992	18 AN	15.3 (1.81) (12-17)	All OP, RA to 32 weeks of Conjoint or separated family therapy	Expressed Emotion FACES	Criticism reduced in good/int outcome group; increased CC, hostility, reduced warmth in poor outcome group. FACES no change in treatment. FACES high dissatisfaction associated with poor treatment response.
Eisler et al, 2000 Dare et al, 2000	40 ICD 10	15.5 (1.6) : 11-17	All OP, RA to 32 weeks of 1) conjoint family therapy 2) separated family therapy	Expressed Emotion	Reduced parental,CC to adolescent increased inter- parental warmth during treatment. Separated family therapy greater improvement weight gain for high EE families. Conjoint family therapy, more reduction interpersonal distrust

Abbreviations: AN: anorexia nervosa; int: intermediate; EE: Expressed emotion; CC: critical comments; FACES: family adaptability and cohesion evaluation scale.

Table 3.1 FAMILY FACTORS AND TREATMENT OUTCOME IN ADOLESCENT ANOREXIA NERVOSA (contd)

Authors	Sample	Age years (SD) (range) at entry to treatment	Treatment	Measures of Family Function	Findings
<i>Other Studies</i>					
Robin et al 1994,1995, 1999	37 AN	12-20	BFST, EOIT over 12-18 months	PARQ, IBC for observed family conflict.	PARQ – reduced conflict over eating, 1 year FU reduced general conflict. IBC - for BFST & EOIT reduced negative increased positive communication.
Shugar & Krueger, 1995	15 AN	14.3 (13-16)	12-14 weeks family therapy, CBT, regular meals	Family aggression scale	Weight gain associated with reduced aggression. 86% of variance in weight gain accounted for by two indicators of aggression.
Van Furth et al 1996.	18 AN, 19 BN 7 ANBN 5 EDNOS	17.3 (2.4)	All family therapy, 50% eclectic individual psycho. over mean 12.6 months. 30% IP, mean stay 20 months.	Expressed Emotion	End treatment outcome predicted by maternal CC to patient (34% outcome variance), more CC worse outcome. 1 year FU, maternal CC predicts 28% outcome variance.
North et al 1997	35 AN	14.9 (1.7)	unclear	Family Assessment Device	Assessment of family functioning by adolescent and interviewer correlated with outcome at 1 and 2 years. Better family functioning associated with better outcome.

Abbreviations: AN: anorexia nervosa; BN: bulimia nervosa; ANBN: anorexia nervosa with bulimia (anorexia nervosa – bulimic subtype); BFST: behavioral family systems therapy; EOIT: ego-oriented individual therapy; FACES: family adaptability and cohesion evaluation scale; FU: follow up; int: intermediate; CC: critical comments; PARQ: Parent Adolescent Relationship Questionnaire; IBC: Interaction Behaviour Code.

studies (Le Grange et al 1992a,b; Eisler et al, 2000) used a semi-structured family interview and the study by van Furth and colleagues, using the traditional method of individual interviews with parents (the Camberwell Family Interview) to assess expressed emotion (van Furth et al, 1996). The convergent findings from these studies is that improved adolescent weight and reduced psychopathology is associated with reduction in family discord, criticism, other aspects of aggression, and increased warmth. Both van Furth et al (1996) and Shugar & Krueger (1995) found that criticism and aggression explained high proportions of the variance of outcome. However limitations of these studies include the small sample size and varied treatments provided. There was also attrition of the sample which reached 33% in the van Furth et (1996) study. Nevertheless these findings have important therapeutic implications.

One other study also supports the idea that family discord and hostility is important in outcome from eating disorders. The recent high quality study previously mentioned (Strober et al, 1997), more hostile family relationships predicted binge eating. For all patients who developed binge eating, this occurred within 5 years of experiencing the initial inpatient treatment. Although it is unclear how family interaction was measured this is an important finding, which is consistent with other data that the onset of bulimia nervosa is associated with exposure to discordant family relationships (Schmidt et al, 1993).

3. The Effect of Non-Participation in Treatment on Outcome

It has been recognised for a long time that premature treatment discontinuation is a major problem in the management of sufferers with eating disorders. Although this has been investigated for many years, many older studies concerns adults and dropout from in-patient treatments which have limited relevance (Vandereycken & Pierloot, 1983). The most relevant studies that all include, or focus on, adolescents with anorexia nervosa are summarised in table 3.2.

The frequency of dropout varies according to studies. Table 3.2 indicates how high these levels can be, with the greatest proportion being 27 of 41 (65%) adolescents failing to complete the course of treatment recommended (Steiner et al, 1990). The assessment of discontinuation itself is complex given that variable numbers sessions or selected components of treatments may be followed (Steiner et al,

Table 3.2 STUDIES OF TREATMENT DROPOUT IN ANOREXIA NERVOSA

Authors	Sample	Age years (SD (range) at entry to treatment	Treatment	FU Period months	Dropout (DO)	Effect on outcome
Szmukler et al, 1985	51 17 BN 34 AN Russell's criteria	22.8 (8.0)	see Russell et al 1987	12	DO associated with parental CC & EOI.	
Russell et al, 1987 Eisler et al, 1997	80 DSM III: 1) 21 EOSH 2) 15 EOLH 3) 21 LO 4) 23 ANBT	17.9 16.6 20.6 27.7 24.0	All IP for weight restoration. Then RA to: 1) family therapy 2) individual	60	Subgroup: 1) 8 2) 7 3) 4 4) 9	Overall 35% DO. In subgroup 1 more DO individual than family therapy group, reverse subgroup 3. Effect DO on outcome not specified.
Steiner et al, 1990	41 AN DSM IIIR	14.8 (2.4)	All IP 6 weeks 14 months OP Family and ind Psychotherapy	32.4 (12-72)	5 refused all 7 minimal 15 only IP or only OP 14 completed	27 DO, 17 had treatment elsewhere. DO group higher EAT, EDI, Zung, no differences weight, menstruation at follow-up.
Crisp et al, 1991 Gowers et al, 1994	90 AN DSM IIIR	22	1) 30 IP 2) 20 - 12 sessions PFT + 4 sessions dietary 3) 20 - 10 sessions group + 4 sessions dietary 4) 2 Assessment	24	1) 18 admitted 2) 18 compliers 3) 17 compliers 4) 14 treated elsewhere	Most in group 2 who had all treatment had good outcome. Group 4 poorer outcome than group 2.

Abbreviations: AN: anorexia nervosa; BN: bulimia nervosa; ANBT: anorexia nervosa with bulimia (anorexia nervosa – bulimic subtype); EOSH: early onset short history; EOLH: early onset long history; LO: late onset; DO: dropout; CC: critical comments; EOI: emotional overinvolvement; EAT: Eating Attitudes Test; EDI: Eating Disorders Inventory; Zung: Zung depression scale. PFT: psychodynamic and family therapy.

1990). Russell et al, (1987) dealt with this by dichotomising dropouts that occurred early or late, with three months being the threshold for this distinction. Other investigators have described the variable numbers of sessions that might be followed (Gowers et al, 1994).

The problem is compounded by the fact that treatment or refusal from one service does not mean that no further help has been obtained. In fact, there may be high rates of seeking help from other services as Steiner et al, (1990) found. Attempts to investigate the effects of withholding treatment as part of a randomised controlled design were singularly unsuccessful as Crisp et al (1991) found that 70% of sufferers and their families offered assessment only obtained treatment elsewhere.

The factors that have been associated with dropout include parental expressed emotion, specifically critical comments and emotional overinvolvement (Szmukler et al, 1985). Other investigators have found that educational background is lower and there is more parental psychiatric disorder in families who drop out of treatment (van Strien et al, 1992). These investigators also showed that the dropouts were less preoccupied with food and appearance than co-operative subjects. It has also been shown that lack of congruence between patients' and therapists' expectations of treatment may increase the risk of dropout (Clinton, 1996). The relevance of this study is unclear as it involved adult patients, whereas for the adolescent group parental expectations may be more important than the expectations of sufferers.

Given the frequency of discontinuation of treatment its potential implications given the life-threatening nature of anorexia nervosa, it is of course crucial to clarify whether this is actually a factor in poorer outcome. Here the literature is surprisingly unhelpful as few have investigated this specifically, although there are suggestions that treatment completers have a better outcome (Gowers et al, 1994).

Conclusions

In recent years there have been a number of treatment studies for adolescent anorexia nervosa but these have limitations such as small sample sizes, and weak measures of change especially with regard to comorbid psychopathology such as

depression. The nature of the changes in family interaction that occur in those who respond well to treatment has not been adequately characterised. Global measures of family function that have sometimes been used are limited in their potential for influencing the development of treatments. This is a crucial area given that there is convincing evidence now that family treatments produce significant benefit for the majority of adolescents with anorexia nervosa. More refined investigation of the changes in the family associated with good and poor treatment response and outcome may lead to improved, more focussed treatments. In addition, it is surprising that there are no adequate studies that investigate the effect on outcome of treatment discontinuation. Given the frequency of premature discontinuation and the concern it evokes regarding the possibility of poor progress, it is important to clarify the extent to which it does actually affect outcome.

Chapter Four

AIMS AND METHODS OF THE STUDY

Introduction to Chapter

This chapter begins by explaining the context of the Maudsley studies of family treatment for anorexia nervosa. The aims and hypotheses of this current study are described. There is then detailed discussion of the methodological aspects of this study, covering the design, measurement issues, and treatment issues.

Background to Current Study

The pioneering work in the family therapy of anorexia nervosa carried out by Minuchin, Selvini Palazzoli and their colleagues (see chapter two) provided the stimulus for more rigorous trials of family therapy which were carried out at the Maudsley Hospital, London (Dare et al, 1995; Russell et al, 1992). The first study investigated the efficacy of family compared with individual supportive psychotherapy for adolescent and adult patients following weight restoration in a ward setting (Russell et al, 1987). The success of family therapy for the younger patients, who were aged less than 18 years and whose disorder was less than three years led to further interest in this group. In this first study attention was paid to family interaction using the measure of expressed emotion, elicited by interview with parents. One dimension of this is the frequency of critical comments made by parents regarding their daughter with anorexia nervosa (Szmukler et al, 1985). This showed that parental criticism was related to dropping out of treatment for those receiving family therapy.

A number of further questions arose regarding the treatment of the adolescent group. The first important issue was whether outpatient family intervention could be successful in the absence of prior in-patient weight restoration. If it could be effective, what types of family management were most effective and acceptable to the families and adolescents. Specifically, did all the family need to be seen together, given the importance of parents in supervising and regulating adolescents' eating in the initial stages of therapy? Finally, if outpatient treatments could be effective how were family relationships affected, and could

specific aspects of interaction be identified that were associated with good outcome?

Pilot and Main Study of Out-patient Family Treatments for Adolescent Anorexia Nervosa

Initially a pilot study was carried out to investigate these questions (Le Grange et al, 1992 a,b). The key results have been described in chapters two and three, but additional aspects relevant here will be summarised. Following assessment by the investigator, there was random allocation of 18 families to either family therapy or family counselling. Treatment was offered over 32 weeks, and there was reassessment 16 and 32 weeks after entry into treatment. Assessment included a whole family interview (Kinston & Loader, 1984), and from this expressed emotion from the parents towards the adolescent with anorexia nervosa was rated. Improvements occurred with respect to the adolescents' weight, eating attitudes and Morgan-Russell global outcome scores (Le Grange et al, 1992b). None of the adolescents required hospital admission during the study time period nor were there any treatment dropouts. Both kinds of family treatment were beneficial, although the study was perhaps too small to detect differences between treatments. Good outcome was associated with lower initial parental criticism or reducing criticism over the 32 weeks treatment period, as compared to those who had poorer outcome at the end of treatment (Le Grange et al, 1992a). Furthermore, in the group with poor outcome after treatment, parents showed less warmth to the adolescent. It was also found that dissatisfaction with family life, as measured by FACES, tended to diminish with treatment, and it was greater with poor treatment response (Le Grange et al, 1992a, b).

The pilot study indicated an appropriate way forward with regard to research design, acceptability of treatments and the range of assessment data needed. The data from the pilot study suggested the benefit of larger sample size, longer duration of treatment, and inclusion of broad measures of psychopathology and family interaction.

The main treatment study was carried out to investigate further some of the questions that could not be answered in the pilot study. Specifically the study was established to investigate whether conjoint family therapy would be more effective than the separated family therapy with a larger sample treated over a longer time period. Many of the findings comparing treatments have been reported elsewhere, and are summarised in chapters two

and three (Dare et al, 2000; Eisler et al, 2000).

Changes During Treatment for Forty Adolescents and their Parents

This study investigates the 40 families from the main study as a cohort and the effects of intervention. There are good reasons for considering the changes to the whole cohort, which are:

1. The similarity in the treatments provided. Specifically, both conjoint and separated family therapies have the same three stages. These include an initial stage when parents are encouraged to supervise their daughters eating and the second stage when there has been some weight gain and control for eating starts to be handed back to the adolescent. The third stage occurs when the eating and weight are in the healthy range and there is discussion of other issues regarding the adolescents' functioning.
2. Given the relatively small sample size of treatment studies for anorexia nervosa, investigation of the cohort is useful in identifying changes and problems that occur for a minority of the patients and their families in each treatment group. These include treatment dropout, deliberate self-harm and the need for hospitalisation of adolescents.
3. To investigate the changes in family relationships and whether these predict outcome from anorexia nervosa.

AIMS and HYPOTHESES OF THIS STUDY

Aims

This study aims to investigate:

- 1) The changes at the individual level with regard to weight, menstrual status, eating attitudes and behaviours, and comorbid psychopathology over the one-year of treatment. Outcome will be assessed using continuous measures such as weight and also the standard outcome categories: good, intermediate and poor.
- 2) The identification of treatment problems especially treatment dropout, and also deliberate self-harm, and need for hospital admission, and specifically the association between these events and outcome.

- 3) Investigation of changes that occur in family interaction using the measure expressed emotion (EE), scored from parents to adolescents and between the parents.
- 4) Whether EE predicts outcome for the adolescents' anorexia nervosa.

Hypotheses

1. There will be significant improvements in weight and reductions in psychopathology during the one year of treatment, with more than 50% of adolescents achieving greater than 85% average body weight at the end of treatment (i.e. achieved good or intermediate outcome)
2. Treatment dropout will be associated with poorer outcome for the adolescents with regard to BMI, general outcome (assessed using the Morgan Russell scales) and depression.
3. During the treatment there will be significant improvement in family relationships, specifically reduction of critical comments from parents to their adolescent offspring.
4. Expressed emotion, specifically critical comments from parents to their adolescent offspring, assessed at the start of treatment, will predict treatment outcome, expressed as BMI, general outcome (assessed using the Morgan Russell scales), and depression.

METHODS

i) Sample

Forty families were recruited into the study, over a 42-month period beginning in September 1988. They were selected from consecutive adolescents referred to the Eating Disorders Service of the Adult Department, or the Children and Adolescents Department of the Maudsley Hospital because of suspected eating disorders. Requirements for entry into the study were that the adolescent should be less than 18 years and live at home with at least one parent. Diagnostic entry criteria for anorexia nervosa were those of Russell (1970), which subsequently formed the basis for ICD 10 criteria (WHO, 1992).

During the recruitment period, 47 adolescents with anorexia nervosa were assessed. Of the seven who could not be entered into the trial, three families declined the offer of outpatient family treatment and sought help elsewhere. The other four had anorexia nervosa of such severity with longer illness duration and greater emaciation associated

with diverse problems, that they required in-patient treatment. The characteristics of the adolescents recruited to the treatment study, and those excluded (because of refusal or need for admission) are shown in table 4.1. It can be seen that the adolescents excluded from the study compared with those included have a similar age but have significantly longer illness duration and are much more emaciated at the time of assessment.

Table 4.1

Characteristics of Adolescents Entered into the Study Compared with those Excluded				
Variable	Entered (N=40) Mean (SD)	Excluded (N=7) Mean (SD)	statistics t significance p	
Age at assessment (years)	15.54 (1.55)	16.52 (0.88)	1.606	.115
Age at onset	14.46 (1.57)	13.96 (1.78)	-.772	.444
Illness duration (months)	12.87 (9.41)	24.57 (12.42)	2.894	.006
Lowest weight since onset (kgs)	38.47 (6.20)	33.42 (5.07)	-2.031	.048
Number of admissions for anorexia nervosa	0.55 (0.84)	1.86 (1.77)	3.130	.003
ABW % at Assessment	74.29 (9.83)	63.71 (10.32)	-2.608	.012
BMI at Assessment	15.41 (1.97)	13.48 (2.23)	-2.334	.024
MR Scales Average	3.30 (1.78)	2.76 (10.32)	-1.083	.284

ii) Assessments

Setting:

All initial assessments were carried out in the Department for Children and Adolescents of the Maudsley Hospital. Reassessments were carried out during the one year that treatment was offered, at three, six and twelve months after the initial assessment, the final one coinciding with the ending of treatment. Reassessments were made even if the families discontinued treatment. The families were invited to come to the Children and Adolescents Department for reassessments, and most agreed to do so. If they preferred not to attend the hospital, the assessments were carried out in their home (five families, one of which refused to meet the investigator for the final assessment). In cases where the families refused to meet the investigator for the assessment, interviewing was carried out by

telephone, and questionnaires obtained by post (two cases). Such assessments were augmented by interviewing other psychiatrists or general practitioners who may have had contact with the patient and family. In one case there was complete refusal to participate in assessments, and information was obtained by interviewing the responsible psychiatrist who had been providing in-patient treatment at another hospital. One assessment was carried out with an adolescent who had been to the adolescent psychiatric unit of the Maudsley Hospital because of poor weight gain in the context of a difficult family situation.

Procedure:

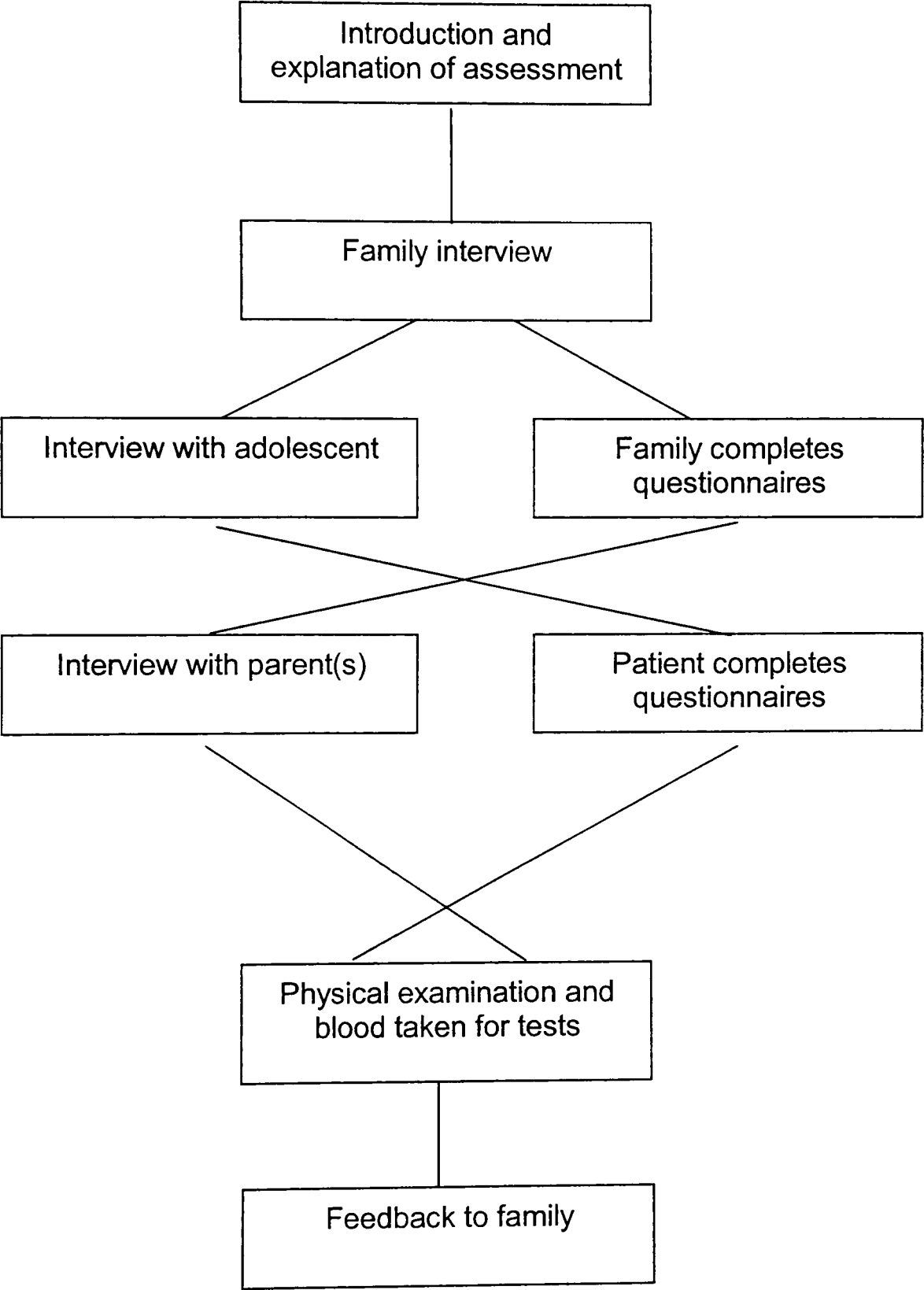
After receiving the referral, the investigator offered an appointment for the adolescent and family to attend the Department of Children and Adolescents for an initial assessment. When parents were separated they were both asked to attend for the initial interview if they had regular contact with the adolescent. The full assessment could take up to six hours, and was usually carried out in the sequence outlined in figure 1. In sixteen cases, during the first half of the recruitment period, parents were interviewed alone rather than together so that the Camberwell Family Interview could be carried out. The details concerning the interviews and questionnaires are described in the next section. The most time consuming parts of the assessment were the interviews with the family, which could take up to 75 minutes, and the interviews with adolescents and parents which could take up to one hour each. The physical examination was in all cases carried out in the presence of the mother, which obviated the need for a chaperone. It also provided the opportunity for the mother to see her daughter's emaciation, which would often have served to heighten anxiety. Following this, screening blood tests were carried out to complete assessment of the physical state (Sharp & Freeman, 1993). Tests included full blood picture to assess anaemia, full biochemistry to identify abnormalities of electrolytes, and gonadotrophins including follicle-stimulating hormone, luteinising hormone and serum oestradiol for monitoring ovarian function.

The feedback provided by the investigator covered three areas. Firstly, there was confirmation that the adolescent had anorexia nervosa, a diagnosis that was known or strongly suspected in all cases. Secondly there was brief discussion about the treatment that would be provided from the Children and Adolescents' Department, Maudsley Hospital. For the adolescents who had been admitted for management of their eating

disorder and came to the assessment from their hospital ward, it was recommended that the adolescent return to the in-patient in the service, until they could attend the first treatment session at the Maudsley Hospital. It was explained that an appointment would be offered within a few days (and in all cases this occurred in less than three weeks) and that discharge could then be arranged by the therapist who would liaise with the hospital ward. For the majority, it was recommended that the adolescents continue to live at home and that treatment would be offered shortly. It was explained that the investigator would work in parallel with the therapist, so that even if the family and adolescent did not continue in treatment, the investigator would wish to make further assessments. The frequency and content of subsequent assessments were outlined. If the family asked what they should do to help their adolescent with anorexia nervosa, the investigator explained that this would be the focus of work with the therapist, and that it would be difficult to explain in a few minutes how to achieve what needed to be done. However, the adolescent had to eat more to gain weight and this was a requirement for becoming healthier physically and psychologically. It was explained that a summary letter would be written to the referring person concerning the assessment, and the salient points of the management plan. In all cases it was explained that the treatment was part of ongoing research, and the data obtained from assessments would be used for research purposes. No families objected to this initially, when participating in the assessment was correctly perceived as the first step in obtaining help.

Subsequent assessments usually followed the same procedure, whether they were carried out at the hospital or the family home. They were all significantly shorter, since the interviewing with patient and parents only had to cover functioning during three or six months. The physical examination was not comprehensive but focussed on abnormalities detected in the initial assessment, although always including measurement of weight and height. In a small number of cases for families receiving the counselling therapy the order of interviewing was changed, so that the assessment could dovetail with the therapy session. If the parents were seen initially for counselling, then the first part of the reassessment would involve the adolescent, and the parents would be interviewed while the therapist saw the adolescent. The family interview took place before or after these interviews.

Figure 4.1
The Procedure for Initial Assessments



iii) Assessment Battery

Assessments were made at the biological, psychological and family interactional levels of functioning. The instruments used at each level will be described, and rationale for their inclusion provided.

i) Biological Function

For all adolescents weight and height were measured using the same apparatus at the Maudsley Hospital, or a portable weighing scale for domiciliary assessments. Abnormalities of weight in relation to height and age are of course defining features of anorexia nervosa (World Health Organisation, 1992), so the need for their inclusion is self-evident. While weight and height are reported, this data is also given as weight corrected for height and age (Average Body Weight, ABW, Tanner and Whitehouse, 1986). Weight is also given as body mass index, BMI, defined as weight (kg) divided by height in metres squared.

At the end of treatment each patient's overall outcome was also categorised using the classification devised by Morgan and Russell (1975):

- (1) A good outcome consists of a patient whose weight is within 15% of ABW, in whom menstruation has returned and there is no evidence of the advent of bulimic pathology.
- (2) An intermediate outcome is the same as a good outcome but without return of menstruation. If any bulimic symptoms are present they are at a frequency of less than once per week.
- (3) A poor outcome consists of a weight below 85% ABW, or bingeing and/or vomiting is occurring with a frequency of once a week or more.

Blood was taken for full blood picture, biochemical screen and tests of ovarian function. The results were used to confirm suitability for out-patient treatment, and provide baseline data for the assessment of change for clinical purposes. This data was not used for the research evaluation of treatment and is not reported here.

ii) Psychological Function

These were assessed in two ways, investigator-based involving psychiatric interviewing, and self-report questionnaire data. At the time of the initial assessment, all adolescents

and parents were interviewed (Department of Psychiatry and Child Psychiatry, Institute of Psychiatry and Maudsley Hospital, 1987), with special attention paid to eating attitudes, behaviours, weight and growth history, and family history of eating and other psychiatric disorders, mood and social adjustment.

a) Morgan Russell scales.

These were completed on the basis of the interview material, incorporating information from adolescents and parents (Morgan & Hayward, 1988; Morgan & Russell 1975). The scales are widely accepted and used in the field of eating disorders, particularly for anorexia nervosa. They have been used in previous controlled trials of psychological treatments (Crisp et al, 1991; Russell et al, 1987), including the pilot study (Le Grange et al, 1992a, b), and have been shown to be reliable, valid and sensitive to change. They were acceptable to adolescents and parents. They cover five main areas of functioning:

A: nutritional status including level of weight loss

B: menstrual status

C: mental state

D: psychosexual functioning including attitudes regarding menstrual functioning, sexual relations, and aims in sexual relationships

E: socio-economic functioning including relationships with the family and peers, and school and work attendance.

The subscales A-E are scored from an average of items that constitute the subscale score. Each item and subscale is scored 0-12, with 12 representing good health. The average outcome score (AOS) is the mean of these five subscale scores.

For this study, the original Morgan Russell scales (Morgan & Russell, 1975) were modified in four ways. Firstly, the measure of menstrual status and psychosexual functioning was omitted for the male patient. Some of the questions regarding psychosexual functioning were omitted for the younger premenarchal patients, as they were inappropriate. Secondly, there was integration of responses from parents and adolescents to give a consensus score for each area. Thirdly, the original scales had been modified (Russell et al, 1987) to include bulimic behaviours such as binge eating, self-induced vomiting, and purging and

these were used. The modifications also include the rating of depression using the Feighner criteria (Feighner et al, 1972), obsessions and tension. All these added items were scored with the same system. Finally, the time period over which the scales were applied varied. The scales were originally intended to refer to a six-month period, and this was appropriate for the initial and final assessment. At the time of the second and third assessments, they were applied to the previous three months.

b) Eating Attitude Test (EAT 40)

This 40-item self-report questionnaire presented in a 6-point forced choice format. The questions are concerned with eating attitudes and behaviours. A score of 30 or more indicates the 'anorexia nervosa range'. This instrument was developed in Canada and the original report showed its positive predictive value in discriminating between normal adults and those with anorexia nervosa (Garner & Garfinkel, 1979; Garner et al, 1982). The questionnaire has been widely used in epidemiological studies of adolescents (Mann et al, 1983; Monck et al, 1990; Whitaker et al, 1989) and is a valid indicator of abnormal eating attitudes. It has been frequently use in treatment studies of anorexia nervosa and has been shown to be sensitive to change (Le Grange et al, 1992a, b; Robin et al, 1994, 1999).

c) Eating Disorders Inventory

This 64-item self-report questionnaire is also presented in a 6-point forced choice format. It was developed for diagnosis and assessment of eating disorders, anorexia nervosa , bulimia nervosa and related disorders (Garner et al, 1983). It was designed to include multiple scales to measure the diverse disturbances that occur. The eight subscales are concerned with drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness and maturity fears. There has been confirmation by factor analysis that eight factors correspond to these subscales (Joiner & Heatherton, 1998). The instrument has been used in many epidemiological studies and has been shown to be responsive to change during treatment (Robin et al, 1994, 1999).

d) Mood and Feelings Questionnaire (MFQ)

This 36 item self-report questionnaire is concerned with mood and depression (Angold et al, 1995). It was designed to be simple, so that children and adolescents could complete it.

The psychometric properties have been described in one study (Angold et al, 1995; Wood et al, 1995). The questionnaire was found to have good reliability, moderate diagnostic accuracy for major depression and was useful in measuring remission. A cut-off set at 27 is taken to identify major depressive disorder (Wood et al, 1995). This relatively new questionnaire had not previously been used for the assessment of depression in adolescent eating disorders. However the psychometric properties and characteristics suggested that it would be suitable for this treatment study.

e) Rosenberg Self-Esteem Scale (RSE)

The RSE is a 10 item self-report questionnaire is a putative trait measure of self-esteem (Rosenberg, 1965). It enables discrimination between positive and negative self-esteem, as well as changes in self-esteem across time. However Rosenberg did not provide a cut-off to distinguish between high and low self-esteem (Rosenberg, 1965). It has been shown to be associated with change occurring during treatment of eating disorders (Fairburn et al, 1987; Freeman et al, 1988; Le Grange et al, 1992b).

f) Maudsley Obsessive Compulsive Inventory (MOCI)

This is a item questionnaire that includes items concerned with checking, cleaning, slowness and doubting that can be added to give a total score (Hodgson & Rachman, 1977; Rachman & Hodgson, 1980). It has been shown to discriminate between adolescents with obsessive-compulsive disorder and those with non-obsessional anxious disorder (Clark & Bolton, 1985). However the instrument shows insensitivity with adolescents with obsessive-compulsive disorders, probably because of under-reporting. Given the dearth of studies investigating treatments for obsessive compulsive disorder, with or without eating disorders, no self-report questionnaires have become generally accepted. The MOCI appeared suitable in view of its acceptability to adolescents, brevity and psychometric properties.

iii) Family Function

Measures of family function can be considered according to two sets of categories. They may be investigator or subject based, and they measure interaction and behaviours between dyads or the functioning of the whole family (Jacob & Tennenbaum, 1988). Thus there are four kinds of measures according to these criteria. Investigator based

assessments based on interview material may give sensitive detailed measures that have excellent psychometric properties with respect to reliability and validity. However questionnaire instruments, for the assessments of family interaction or psychopathology, also have advantages which include their ease of completion, and ascertaining responses that does not require investigator subject interaction. Measures of family interaction were selected that would reflect the benefits from these different kinds of assessments. Their choice was also influenced by the findings of the previous studies carried out at the Maudsley Hospital into family treatments for eating disorders (see chapter three).

a) Expressed Emotion (EE)

This instrument measures certain aspects of communication style and reported behaviour by a relative towards another family member (Leff & Vaughn, 1985). It consists of five components, which are: critical comments (CC), hostility, emotional overinvolvement (EOI), warmth and positive remarks. The first and last of these are measured as frequency counts. EOI is made up of exaggerated emotional response in the interview, excessive detail about the past and over-protective behaviour. Warmth is identified by interest in the person, expressed enjoyment of joint activities and warm tone is describing the individual. Emotional overinvolvement and warmth are measured according to a five point scale. Hostility can be identified as present or absent, and is identified on the basis of generalisation of a critical comment, rejecting comments or presence of both. Detailed manuals define these dimensions of EE.

EE was initially developed to assess qualities of relating from one family member towards another who was identified as the index patient and who suffered from schizophrenia (Vaughn & Leff, 1976a). When it was first developed it was elicited from lengthy interviews, called the Camberwell Family Interview, that lasted up to four hours (Brown & Rutter, 1966; Rutter & Brown, 1966). However, it was later abbreviated and refined (Vaughn & Leff, 1976b). The interview is semistructured and covers a number of areas of family life, and various behaviours associated with the onset of psychiatric disorder. The interviews are audiotaped, and the ratings are derived from the recordings.

A vast amount of research has been carried out using EE as a measure of family change in the field of schizophrenia (Bebbington & Kuipers, 1994; Kavanagh, 1992), but it has also

been used for the investigation of other psychiatric disorders including eating disorders (Hodes & Le Grange, 1993). Since EE consists of five separate scales, findings are often reported in condensed form for treatment and prognostic purposes. It has become conventional to categorise it as high or low, according to levels of CC and EOI, as these are strong predictors of poor outcome, relapse and readmission in schizophrenia. Clearly, there is no reason why the particular levels used to dichotomise families in schizophrenia research should be relevant to the treatment of anorexia nervosa, but the principle of dichotomising is applicable in eating disorders (Szmukler et al, 1985). Dichotomising families on the basis of EE has been incorporated into the design of this study (see section on treatment allocation).

Although EE is traditionally rated from individual interviews with a relative, in recent years there has been growing interest in the rating of speech from family interviews. Interest in this occurs because of the time demands of carrying out Camberwell Family Interviews with a number of family members. The influence of the systems approach in family therapy (see chapter two) has also led investigators to consider EE in a family context. A number of studies have indicated that it is feasible to rate EE from family interviews (Berkowitz, 1987; Le Grange et al, 1992a; Szmukler et al, 1987). In response to this influence the pilot study used The Standardised Clinical Family Interview as the basis to rating EE (Kinston and Loader, 1984). This interview was designed to include all family members, and be suitable for labelled and non-labelled families. The three phases of the interview will be briefly outlined here, and the topics of the interview are presented in the Appendix 1. The first phase is the introduction and explanation of the rules of the interview, which include the invitation of all family members to participate. The main body of the interview is concerned with the functioning of the family by asking about various aspects of family life, including the way in which the family described themselves, joint activities and separateness, similarities and differences, attitudes to the family life cycle, roles and responsibilities, conflicts, decision making, discipline, and the family's relationship to the wider community. The last phase brings the interview to a close. The psychometric properties of the interview were found to be acceptable, with good test-retest and inter-rater reliability (Kinston & Loader, 1986). Consideration was given to the effect of drift away from the questions and prompts indicated in the protocol. In this study, it was occasionally necessary to make slight additions by using concerns and behaviours in relation to the adolescent with

anorexia nervosa as prompts. Since the same investigator carried out all family interviews, variation from interviewer style could be minimised. It usually was completed within one hour. The family interviews were video-recorded, or audio-recorded for rating for EE. All interviews were rated for EE from parent(s) to the adolescent with anorexia nervosa, and also for EE between parents. The additional ratings of inter-parental EE have not been made before in this or other interviews but it was felt that it would be an economical and revealing measure of relationship change during the course of therapy.

Only two published studies have investigated the correlation of EE rated from the individual interview with the ratings obtained from a family interview. The first was carried out during a therapeutic family meal (Szmukler et al, 1987). This showed high correlation for CC but they were only moderate for other dimensions of EE. The second study investigating the correlation between EE in family and individual settings using semi-structured interviews, compared the CFI with the Standardised Clinical Family Interview (Hodes et al, 1999, see Appendix 1). The results show moderate correlation for critical comments, but these are high for fathers, and low correlation for the rating of warmth. This is a limitation of not using the Camberwell Family Interview, as comparison with other studies regarding EE is more limited. Nevertheless, the time saving nature of the family interview, its acceptability to families, and its sensitivity to change and association with outcome led to its inclusion in this study.

b) Family Adaptability and Cohesion Evaluation Scale (FACES III)

This instrument is a self-report questionnaire concerning the two dimensions of family life, cohesion and adaptability, that are the defining characteristics of the circumplex model of family functioning (Olson et al, 1979). The finding from the pilot study was that there were changes in FACES III scores during the course of treatment (Le Grange et al, 1992b). There was more satisfaction with family life as treatment progressed for the good outcome group, and families with poor treatment response had higher dissatisfaction. This led to the inclusion of FACES III in this study. The results regarding the FACES are available elsewhere and so this instrument will not be further discussed (Dare et al, ms).

iv) Treatment Allocation

The study involved stratified random allocation to either family therapy or family

counselling. Given the relatively small size of the study, it was important that there would not be more drop-outs from one of the treatments attributable to patient or family characteristics. Therefore, stratification was used to try to match the groups with respect to an important variable, family interaction, measured from parental expressed emotion towards the index patient, which had previously been shown to be associated with dropping out of treatment and treatment progress (Le Grange et al, 1992a; Szmukler et al, 1985). This expressed emotion score was obtained from the whole family interview (Kinston and Loader, 1984) carried out during the initial assessment. The interview was rated within two days of the assessment, and families dichotomised according to the level of critical comments made by the parents. Families in which there were more than one critical comments made towards the index patient were regarded as high expressed emotion, and those with none or one, low expressed emotion. This level was determined from the pilot study (Le Grange et al, 1992a). Using a list generated by random numbers, families were then randomly allocated to treatment group according to the level of expressed emotion. The key elements of the design are illustrated in figure 4.2.

v) Provision of Treatments

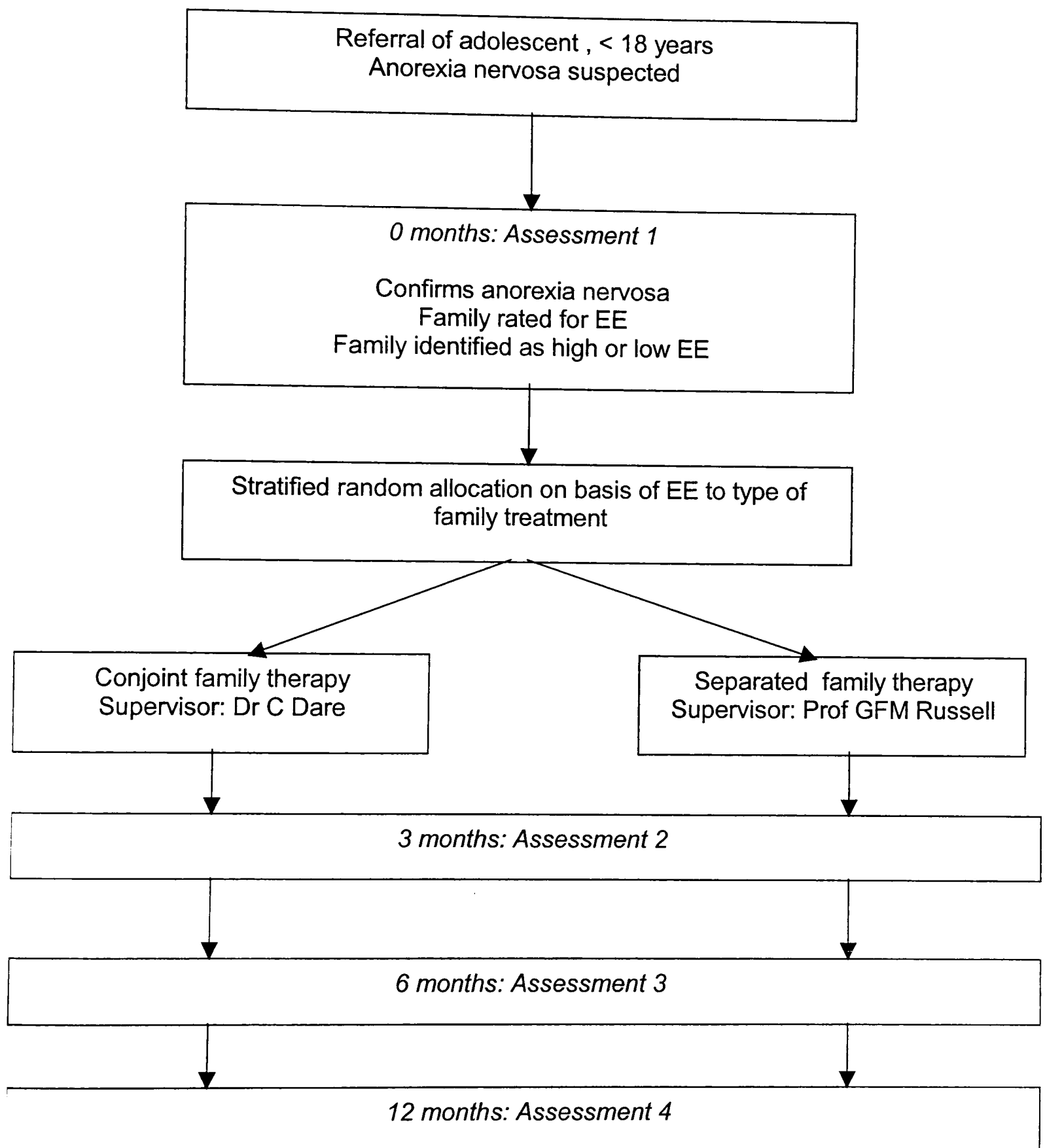
i) Similarities between Conjoint and Separated Family Therapy

The salient features of these therapies have been outlined in chapters two and three. However they will be discussed in rather more detail here, initially with regard to similarities. For families where there was parental separation, because of discord or work commitments, the therapist would see the adolescent with anorexia nervosa and whoever the index patient lived with.

The stance of the therapist was authoritative, directive, and cautiously optimistic (Dare & Szmukler, 1991). The therapist at all times communicated the seriousness of the problem and kept in mind, and shared with the family concerns about the weight and progress of the index-patient. The therapist did this partly by the focus of the sessions, and also by routinely weighing the patient at each session.

The therapy followed a sequence, and three stages have been described (Dare et al, 1990). First phase involves focussing on the adolescents' weight and need to eat more.

Figure 4.2
Design of trial showing allocation of patients to treatments



The self-starvation and inability to eat healthily is described by the therapist as evidence of loss of control. In view of this the therapist encourages or if necessary directs the parents to take over control of this task. After the adolescents' weight started to go up, and the air of crisis diminished, then the second stage would begin. This involved the handing over of more responsibility for regulating eating to the adolescent. This slightly increased autonomy and the associated improved psychological state might make possible a gradual return to school and resumption of age appropriate activities. Continuing improvement would in many cases lead to the third stage when there would be increasing consideration of adolescent developmental issues, sibling relationships and family life-cycle issues. This would culminate in the families' separation from the therapist and termination of treatment.

In both family therapy and family counselling, the number of sessions and the frequency was related to clinical need. At the beginning of therapy the sessions were held weekly, and this would change according to progress so that they would become fortnightly and then three weekly. For a small number of families in which there was poor progress sessions were offered weekly for many months. The reason for this was to evaluate treatments, which would resemble the kinds of treatments that would be available in clinical settings. Varying the number of sessions was intended to give greater ecological validity to the study. Studies that offer the same amount of time to all cases in psychological treatment research are evaluating treatments that would not be offered in any other context.

ii) Differences between Conjoint and Separated Family Therapy

Conjoint family therapy involved the therapist meeting with the whole family, and all sessions took place in this format. This enabled the therapist to see the interactions, ways of relating and identify family myths and shared beliefs. The therapist could then intervene to produce change at the level of family interaction. This was consistent with the aims of the study. An important occasion for achieving this was the family meal when the family patterns associated with the disorder could be seen especially starkly.

Separated family therapy involved the therapist meeting the parents and adolescent in consecutive sessions, and other family members were not involved with the treatment. Obviously this meant that interactions between all family members could not be seen and

witnessing family members sharing views could not identify family myths and beliefs. It was not possible to carry out a family meal, and so the therapist relied on the parents' and the adolescents' accounts of eating difficulties, conflicts that may emerge from them and ways of resolving them. The relationship did not involve exploration of transference, but rather did consider family relationship difficulties, confiding and conflict, and also the adolescents' concerns with eating and body shape. Sessions with the parents were in the first half of therapy more focussed on the self-starvation but then changed to consider the parental relationship, and finally any issues in the marital relationship, especially those associated with family life-cycle transition.

iii) Definition of Treatment Dropout

The study was based on intent to treat analysis, so the data presented concerns all forty families entered into the study. Dropout refers to families who discontinue attendance against the advice of the therapist. This criterion is based on treatment progress and weight and adjustment of the adolescent. There were families in which one parent discontinued attendance, but this was not counted as treatment dropout.

vi) Therapist Fidelity

In order to provide the two types of therapy in consistent ways, attempts were made to maintain consistency. Firstly the numbers of therapists was limited to three. They were all experienced clinicians. One had been trained as a social worker and then as a family therapist, another as a clinical psychologist and family therapist, and the third, the only male therapist, was a medical graduate who had worked in varied psychotherapies before embarking on advanced training in family therapy. Families were allocated to them approximately in consecutive order, giving each therapist approximately the same number of families for each treatment modality. Secondly therapy was supervised regularly by two different supervisors. Dr C. Dare supervised the family therapy and Professor G. Russell supervised the family counselling. Supervision for each family usually started when the therapist met the family for the first time, and this first session could be viewed through the one-way screen. Subsequently, in weekly supervision progress in therapy was discussed and as well as the need to stick to the assigned therapy protocol. Some of the supervision sessions during therapy involved seeing the interview through the one-way screen, or previous video-recorded sessions were shown.

vii Statistics

Data based on interval and continuous scores was explored to investigate whether the distributions were normal or skewed, and assessed for this using the Q-Q plots and Kolmogorov-Smirnov statistic (Field, 2000). Data that did not appear normally distributed was further investigated using the Kolmogorov-Smirnov statistic for the standardised residuals. It was found that the continuous variables such as age, body mass index etc were normally distributed. Measures such as the Morgan Russell Average Outcome Score were also found to be normally distributed, as were some of the subscales. This indicates that if the sample size were large enough all the subscales would be normally distributed, according to central limit theorem (Altman, 1991). Parametric tests, such as analysis of variance, were used for the analysis of differences of means where appropriate. Analysis of covariance was also carried out where it was appropriate to correct for possible confounders.

Data such as the measure expressed emotion had some subscales were normally distributed but others were not. The lack of normality may have been explained by the number of subscales on which there were scores of 0 for many of the subjects. In view of this expressed emotion data is described with means, standard deviations, as well as medians and ranges. Providing the data in this way also permits comparison with other studies, which have variously used parametric or non-parametric statistics. Investigation of association for categorical variables, including expressed emotion when dichotomised into “high” and “low” was carried out using non-parametric statistics, such as chi squared. Investigation of association by correlation using skewed data was carried out using Spearman’s rho.

Calculation of change of values was carried out using multivariate repeated measures within subjects designs. Such statistics can be carried on normally and non-normally distributed data, because the statistic is concerned with change in values (Altman, 1991). The statistic multivariate repeated measures within subjects designs is not dependent on the assumption of sphericity.

Multiple regression using the forward stepwise method was carried out to identify predictors of outcome for continuous variables. Variables that were most likely to be predictors of

outcome were firstly identified by correlation (see below, section on power). These variables were entered first into the equation. Then variables which had not been identified but which were expected to be predictors on theoretical grounds, and which were hypotheses under investigation, were entered. The third stage was to enter other variable to see if any were retained. For each outcome variable, this process was firstly begun with background and illness variables of the adolescent, and secondly it was carried out with expressed emotion. The rationale for this sequence was that variables that were expected to be significant predictors of outcome (e.g. expressed emotion, specifically critical comments) could then be retained only after previously identified predictors had been identified (Field, 2000). Regarding categorical outcomes, including treatment dropout forward stepwise logistic regression analysis was carried out following the procedure just described for multiple regression.

Statistics were carried out on SPSS for windows versions 9 and 10.

viii) Power Considerations

The power of a test is the probability that a study of a given size would detect as statistically significant a real difference of a given magnitude. For this research study power has been considered for two hypotheses (see page 59), selected on the basis of their importance and the availability of appropriate data from earlier studies. The first hypothesis is that there will be significant improvement in weight and reduction in psychopathology during the one year of treatment. This can be considered in terms of categorical change of weight, in relation to adolescents who achieved good/intermediate outcome i.e. healthy weight, (85% of Average Body Weight) and those who did not (see page 64). In order to carry out the power calculation the rate of spontaneous remission is needed. The most suitable data comes from the follow up study of a community population of 15-year-old adolescents with anorexia nervosa in Goteborg (Gillberg et al, 1994). At initial assessment the adolescents had mean BMI of 18.3 (SD 2.9), and most did not have treatment. Nevertheless, at 5 year follow up 75% achieved healthy weight, suggesting a rate of weight recovery of approximately 15% per annum. Given that the adolescents in this treatment study were much more emaciated at initial assessment (mean BMI 15.4 (SD 2.0)), it can be expected that the rate of spontaneous recovery would be much less and may be 5% per annum. Assuming that without treatment 5% of subjects would spontaneously recover in

one year, then a one-sided test at the 5% level would require approximately 41 subjects to detect a 20% recovery rate with 90% power (Machin & Campbell, 1987). These figures are very conservative, since it is expected that with treatment a higher proportion will have achieved healthy weight, and it is expected that statistically very significant improvement would occur over the one year.

The fourth hypothesis is that parental expressed emotion, specifically critical comments, will predict treatment outcome, expressed as BMI, general outcome using the Morgan Russell scales and depression. Power for predictive tests using multiple regression or logistic regression is estimated using the magnitude of correlation between the single predictor and the outcome variable of interest. The table below (table 4.2) gives the magnitude of the correlation detectable at various powers (0%, 85%, and 90%) at the various 2-sided significance levels (Machin & Campbell, 1987).

Table 4.2
Significance levels for the magnitude of the correlation detectable at various powers.

	Power		
Significance	80%	85%	90%
10%	0.39	0.44	0.46
5%	0.43	0.45	0.48
2%	0.47	0.50	0.53

The square of the correlation is R squared, which is the amount of variability accounted for by the regression. Medium to large correlation could be regarded as 0.3-0.5, but interpretation of the significance of correlation requires a lot of contextual information (Altman, 1991). Nevertheless, such values are important is considering how to carry out the multiple regression. Multiple regression using the forward stepwise method was carried out by firstly entering variables that had been shown to have significant correlation with the outcome variable of interest. Further details of the correlation and expectations from the multiple regression analyses are described in chapter 5.

On empirical and theoretical grounds, it was expected that a parental critical comments would predict outcome, reflected in Morgan Russell average outcome score. The study by Van Furth et al (1996) (see table 3.1) found that one year treatment outcome was predicted using forward multiple regression analysis by maternal critical comments to the adolescents ($F_{1,23} = 13.25, p < 0.01$), and the mother's critical comments explained 34% of the outcome variance (adjusted r^2 Change 0.034). Given the smaller numbers of subjects followed up in van Furth's study (outcome data at the end of one year of treatment was available on 33 subjects), it would be expected that the replication with 40 subjects in this study would have adequate power.

Chapter Five

RESULTS

The Patient Population

The patient characteristics are shown in Table 5.1. As might be expected, most patients are female, and from higher social classes. They had a range of birth orders. The majority of adolescents were living with their birth parents, but a significant number came from other family structures. All families were ethnically white English except for one that was Indian Sikh by background.

The patients were in the mid-adolescent age range, and most were post-menarchal at the time of presentation. They mostly had a short duration of illness. Some were very emaciated at the time of assessment, and most very underweight, as the group was on average 25% below healthy weight. Others had gained some weight since referral, which accounted for their being close to the healthy weight range. Nearly half had bulimic features.

Of the 40 adolescents, 24 had received psychiatric treatment prior to referral. 7 (17%) had received outpatient treatment. 17 (42.5%) had experienced in-patient treatment, and 4 (10%) of the adolescents had two or more in-patient admissions.

Regarding family history of psychiatric disorder, 7 (17.5%) had a family history of an eating disorder in a first-degree relative (mother or sibling), while 11 (27.5%) had a family history of another disorder.

Association Between Illness Characteristics at Presentation and Background Characteristics

The first associations that have been investigated concern the links between presenting characteristics.

Table 5.1

Patient Population: Family and Sociodemographic Characteristics			
Variable		N = 40	
<u>Sex</u> , Female: Male		39: 1	
<u>Social Class</u>			
I-II		26 (65%)	
III - V		9 (22.5%)	
VI – VIII		5 (12.5%)	
<u>Sibling Position</u>			
single child		3 (7.5%)	
oldest		14 (35%)	
middle		3 (7.5)	
youngest		20 (50%)	
<u>Current family structure</u>			
nuclear		28 (70%)	
single parent		4 (10%)	
reconstituted		6 (15%)	
partial separation – father away >10 months annually		2 (5%)	

Patient Population: Illness Characteristics			
Variable	Mean (SD)	Minimum	Maximum
Age (years)	15.5 (1.6)	11.5	17.8
Age of onset (years)	14.5 (1.6)	10.6	17.0
Lowest weight (kgs)	38.5 (6.2)	26.0	48.5
Illness duration (months)	12.9 (9.4)	2.0	36.0
Current weight (kgs)	40.0 (6.4)	28.0	53.0
ABW%	74.3 (9.8)	50.0	95.0
BMI	15.4 (2.0)	10.8	19.3
Bulimic symptoms (bingeing, vomiting, laxative abuse)	> weekly 10 (25%) < weekly 9 (22.5%) never 21 (52.5%)		
<u>Pubertal status</u>			
Tanner stage 0	3 (7.5%)		
stage 1	1 (2.5%)		
stage 4	1 (2.5%)		
stage 5	34 (85%)		
unknown	1 (2.5%)		
<u>Menstrual status</u>			
Primary amenorrhoea	4 (10%)		
Secondary amenorrhoea	29 (72.5%)		
Irregular menstruation	3 (7.5%)		
Premenarchal	3 (7.5%)		
Not applicable (male)	1 (2.5%)		

1. Weight

Given the importance of weight in anorexia nervosa, the association between initial BMI and illness and family background characteristics was first investigated. There was no association between BMI and the family structure that the adolescent came from (comparing nuclear and other structures). Initial BMI did not show significant correlation with age. There was a trend for initial BMI to be associated with having had past treatments. Thus, adolescents who had not experienced previous treatment had a mean BMI of 16.1 (SD 1.6), while those who had previous treatment it was 15.0 (SD 2.1) ($t = 1.79$, $p = .080$). Initial BMI was associated with illness duration, so that a lower BMI was found in those who had been ill longer ($r = -.495$, $p = .001$).

Initial BMI was associated with a number of aspects of the anorexia nervosa. Not surprisingly, it was positively correlated with menstrual status over the previous six months (Morgan-Russell (MR) B scale), ($\rho = .610$, $p = .000$), global psychosocial adjustment (MRE scale), ($\rho = .414$, $p = .008$), and MR average, ($\rho = .430$, $p = .006$). Regarding specific symptoms and attitudes, BMI was negatively correlated with bulimia (MRF bulimia), ($\rho = -.395$, $p = .012$), meaning that more emaciated adolescents showed fewer bulimic behaviours.

1. Bulimia

Bulimia, when scored as a composite of binge eating, vomiting and laxative abuse, only showed significant correlation with weight at the initial assessment (see section 1 above). There was no association between initial bulimia and family structure (living in nuclear or other family), nor did it show any significant correlation with age, illness duration, eating attitudes, mood, self-esteem, or obsessional behaviours.

2. Illness Duration

There was no association between illness duration and adolescents' age or family structure. However as might be expected there was a strong association between having had past treatments and illness duration. Those who had no past treatments had a significantly shorter illness duration, mean 8.4 (SD 7.4) months, while those who had past treatment had a mean illness duration of 15.8 (SD 10.0) months ($t = 2.611$, $p = .013$). Illness duration was associated with a number of aspects of the anorexia nervosa, with findings in the expected direction that the longer the illness the more severe the disorder. Illness duration was significantly correlated with MRA nutritional

subscale, ($\rho=-.399$, $p=.011$), MRB menstrual subscale ($\rho=-.573$, $p=.000$), MRD psychosexual subscale ($\rho=-.458$, $p=.003$), MRE socio-economic subscale ($\rho=-.475$, $p=.002$), and MRAOS average ($\rho=-.632$, $p=.000$). There was no association between illness duration and any measure of eating attitudes, mood, self-esteem, or obsessionality.

Changes at the Individual Level

1 Change as a Continuous Variable

i) The Individual Changes

Changes at the individual level occur with regard to weight, best measured as BMI, interview measures of psychiatric disorder and eating behaviours and nutritional state using the Morgan-Russell scales, and adolescents' eating attitudes, mood, self-esteem, obsessionality assessed by self-report questionnaire data. The changes during the one year of treatment are shown in table 5.2.

Table 5.2 shows that during the one year of treatment offered there was very substantial improvement for the key feature weight, which increased by approximately 20%. This is reflected in the improved ABW, BMI and MRA nutritional subscale. There was also very significant improvement in eating attitudes measured by both the EAT and the EDI. The lack of overall improvement in various bulimic behaviours (binge eating, laxative abuse, and vomiting) occurred because of the relatively low level of each of these behaviours in the adolescents. When these behaviours are made into a composite score, there was a significant improvement from T1 mean 7.7 (SD 5.1) to T4, mean 10.2 (SD 3.6), $t=3.0$, $p=.01$.

It can also be seen that there are very significant improvements in all measures of comorbid psychopathology, when rated by the interviewer according to the MRC subscale, Depression, and Obsessionality scales, and also self-report measures using the MFQ, and to a lesser extent the MOCI. There was a different rate of change across time periods. Thus weight changed dramatically within three months, as did the Depression score, EAT and EDI scores. Interestingly there were no significant changes

Table 5.2

Changes in Individual Measures During Treatment							
Variable	T1 N=40	T2 N=39	T3 N=38	T4 N=40	Changes T1-T4		Changes T1-T2
	mean (SD)	mean (SD)	mean (SD)	mean (SD)	F+	p	p*
Weight (kg)	40.0 (6.4)	44.9 (6.7)	48.1 (6.9)	48.1 (7.3)	25.5	.000	.000
ABW	74.3 (9.8)	82.1 (9.6)	87.4 (11.7)	87.0 (13.0)	19.6	.000	.000
BMI	15.4 (2.0)	17.3 (1.9)	18.5 (2.4)	18.5 (2.7)	23.2	.000	.000
MRA nutritional	3.3 (1.8)	6.9 (2.8)	8.4 (2.8)***	8.7 (3.0)***	43.6	.000	.000
MRB menstrual	1.9 (3.0)+	1.8 (4.0)+	3.5 (5.1)++	4.9 (5.3)+++	3.4	.032	.661
MRC mental state	7.1 (1.9)	8.6 (2.8)	9.8 (2.6)****	10.2 (2.6)++	12.4	.000	.007
MRD psychosexual	6.9 (3.7)*	6.6 (3.1)	7.5 (3.0)****	7.7 (3.6)****	3.0	.047	.615
MRE socio-economic	8.0 (3.0)	7.9 (2.9)*	8.9 (3.1)**	9.7 (2.7)**	8.3	.000	.915
MRAOS average	5.5 (1.7)	6.5 (2.3)*	7.7 (2.6)**	8.3 (2.5)**	19.7	.000	.005
MRF bulimia	11.1 (2.8)	11.6 (1.7)	11.5 (2.2)**	11.4 (2.2)	1.2	.326	.303
MRF vomiting	9.3 (4.4)	10.6 (2.7)*	11.1 (3.0)***	10.9 (3.1)	1.9	.142	.057
MRF laxative	10.2 (3.5)	11.2 (2.3)	11.7 (2.0)***	11.5 (1.9)	2.3	.096	.085
Depression	2.9 (3.2)	5.8 (5.0)	8.3 (4.6)**	7.8 (5.0)	17.0	.000	.000
Obsessionality	8.3 (3.4)	8.6 (3.9)	9.8 (3.2)***	10.2 (3.0)	5.3	.005	.584
Tension	6.1 (3.9)	7.4 (3.8)*	8.0 (4.1)***	9.2 (3.7)*	5.1	.005	.177
EAT	50.0 (25.3)	32.6 (27.3)	24.6 (21.3)	19.7 (16.1)	13.5	.000	.000
EDI	59.6 (33.3)	42.2 (36.3)	34.3 (28.5)	28.9 (22.1)	9.9	.000	.000
MFQ	27.3 (12.5)	22.0 (17.0)	16.3 (13.5)	13.9 (13.6)	7.2	.001	.072
RSE	24.3 (6.4)	25.5 (7.9)	27.1 (7.5)	27.9 (6.9)	2.09	.128	.580
MOCI	6.9 (4.4)	5.9 (6.1)	5.1 (5.2)	4.2 (4.6)	3.6	.027	.041

+ Multivariate analysis of variance repeated measures within subject design. F statistics based on (3, 35) degrees of freedom. *Comparison of mean scores at T1 and T2 using paired T tests.

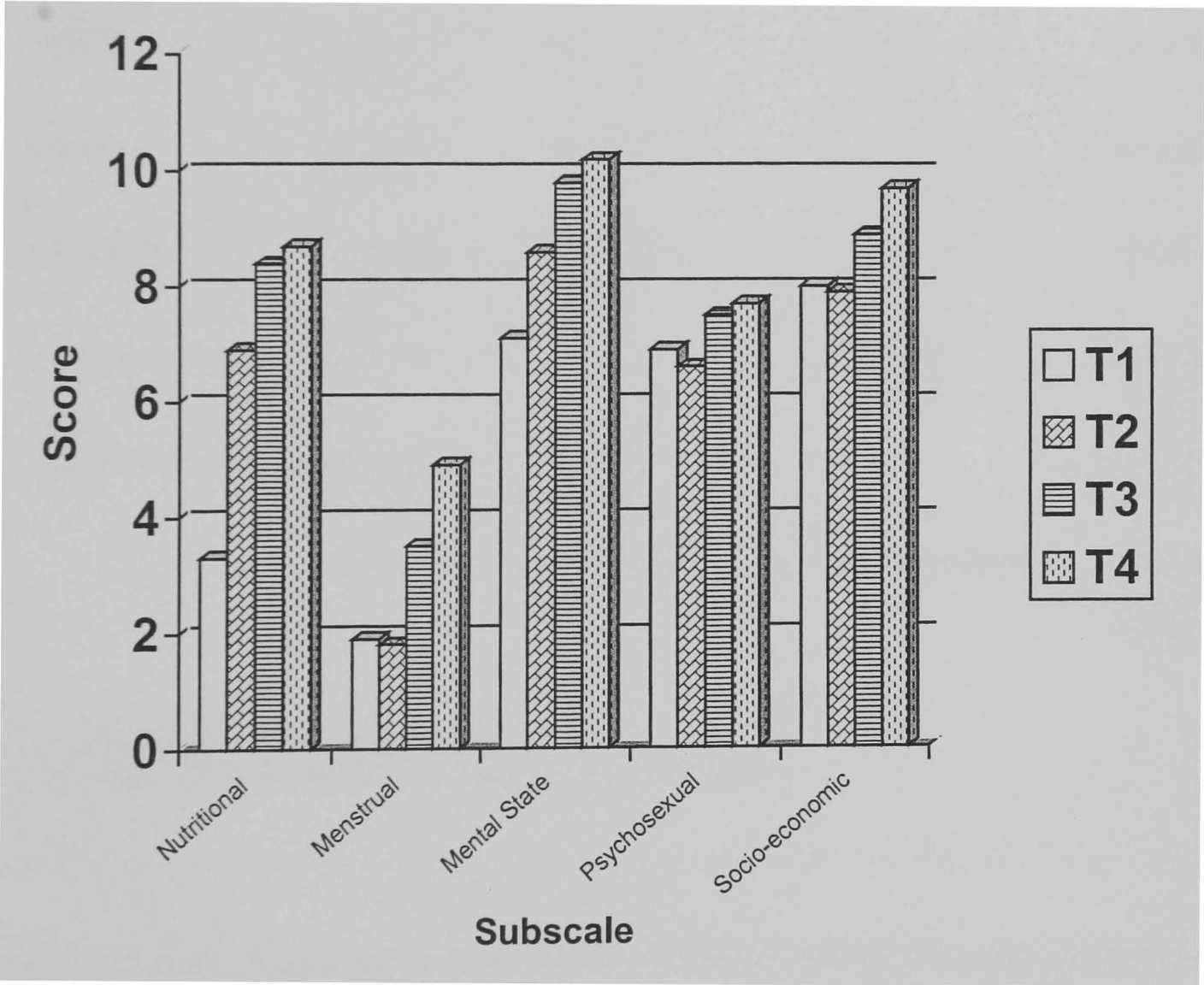
Data unavailable on a further * 1, ** 2, , *** 3, **** 4, + 5, ++ 6, +++ 7 subjects (i.e. from column numbers)

See chapter 6 regarding missing questionnaire data: EAT, EDI, MFQ, RSE, MOCI)

during the first three months of treatment for the MRB menstrual, MRD psychosexual and the MRE socio-economic subscales, nor for self-rated mood using the MFQ, and self-esteem using the RSE. Improvement of self-rated mood and social function occurs significantly more slowly than change in weight, and eating attitudes. The different rates of change can be clearly seen by looking at the changes of the Morgan-Russell subscales illustrated by figure 5.1.

Figure 5.1

**Changes in Morgan-Russell Subscale Scores
over One Year**



ii) Factors associated with Outcome

a) Background Factors

Outcome as a continuous variable can be assessed using at final assessment (T4) either weight (as ABW or BMI) or the Morgan-Russell average outcome score (MRAOS). Table 5.3 shows the of selected background variables with outcome at T4.

Table 5.3

Correlation of Outcome (T4) and Background Factors				
ABW	rho=-.473 p=.002	rho=-.248	rho=-.389 p=.013	rho=.166
BMI	rho=-.340 p=.032	rho=-.245	rho=-.360 p=.023	rho=.229
MRAOS	rho=-.408 p=.011	rho=-.356 p=.028	rho=-.245	rho=.304
Illness duration	rho=.175		rho=.500 p=.001	rho=-.548 p=.000
Past treatments	rho=.320 p=.044	rho=.500 p=.001		rho=-.432 p=.005
	Age	Illness duration	Past treatment	Lowest past weight % ABW
Correlation using spearman's rho P values given for statistically significant associations				

In table 5.3 past treatments for eating disorders were ranked into three categories: adolescents having no treatments, only out-patient treatment, one or more admissions for the eating disorder.

It can be seen that there is significant negative correlation between all three measures of outcome and age, so older patients fared worse than younger patients. Longer illness

duration was associated with having more past treatments, and more past treatments was associated with poorer outcome using weight related outcome measures. Having achieved lower past weight, as a percentage of ABW, was associated with greater illness duration and having received more intensive past treatments.

There were no associations between initial pubertal status, according to Tanner ratings, with the group dichotomised as pre-pubertal (n=4) or post-pubertal (n=35) and outcome. There was also no identified association between outcome and whether the adolescent lived with a nuclear family or other family structures.

b) Illness variables and Outcome

Final BMI (T4) was significantly associated with initial T1 BMI ($r=.458$, $p=.003$). Regarding the initial illness variables, final BMI (T4) was associated with the initial MRE socio-economic subscale, ($\rho=.407$, $p=.009$) but not other MR subscales, the MRAOS or illness measures such as bulimic features, eating attitudes, mood or self-esteem.

Final outcome can also be assessed by using the MR average outcome scale (MRAOS). The final MRAOS was associated with initial BMI ($\rho=.398$, $p=.013$), and the initial MR subscales A nutritional subscale, ($\rho=.358$, $p=.027$), B menstrual subscale ($\rho=.426$, $p=.013$), D psychosexual subscale ($\rho=.362$, $p=.028$), E socio-economic subscale ($\rho=.471$, $p=.003$), and the initial MRAOS ($\rho=.583$, $p=.000$). The final MRAOS was associated with initial self-esteem score ($\rho=.337$, $p=.044$), but not initial measures of eating attitudes, MFQ or obsessionality.

c) Treatment and Outcome

There was no significant association between final BMI or ABW and the number of treatment sessions attended during the one year. However there was a negative correlation between the number of sessions and the MRAOS ($\rho=-.375$, $p=.027$), meaning that the adolescents who had more sessions had worse global outcome.

2 Change by Categories of Outcome

i) General Outcome

Outcome can be assessed by looking at categories of outcome, which have been established as : good, intermediate and poor (Russell et al, 1987; Le Grange et al, 1992a,b). Both the good and intermediate outcome categories require return to healthy

weight (i.e. 85% ABW), but in the intermediate category there has been no resumption of menstruation. Analysis by outcome category is important to confirm correlation analysis. It is also important in anorexia nervosa because the definition of the disorder requires significant weight loss, or failure to gain weight, which is taken to be 15% below healthy weight (American Psychiatric Association, 1994; WHO, 1992). Many investigators believe there is a critical threshold that needs to be achieved for recovery to have occurred (Crisp, et al, 1991).

The breakdown according to outcome was: 15 adolescents achieved good outcome, 10 intermediate and 15 poor outcome.

Table 5.4 shows the significant findings regarding the association between categories of outcome and background and treatment variables. There was no difference in outcome according to initial BMI, surprising in view of its association with final T4 BMI when correlation analysis is carried out. Strikingly there were no associations between categories of outcome and any initial illness variable such as illness duration, the MR scales, or measures of eating attitudes, mood, self-esteem and obsessionality. As can be seen from figure 5.4 those who had better outcome had fewer treatment sessions.

Table 5.4

Association between Outcome Category and Background and Treatment Variables (showing significant results)					
Variable	Outcome Category			Statistics+	
	N=15 Good mean (SD)	N=10 Intermediate mean (SD)	N=15 Poor mean (SD)	F value	p
Age (years)	14.7 (1.8)	15.9 (.93)	16. 1 (1.3)	5.24	.010
Illness duration (months)	7.9 (5.7)	15.8 (11.0)	15.7 (9.7)	3.78	.032
Number of past treatments	.69 (.75)	.67 (.71)	1.6 (1.2)	5.86	.006
ABW at T1	79.9 (7.9)	73.4 (7.9)	69.5 (11.0)	4.99	.012
Number of sessions	11.4 (6.4)	19.8 (4.3)	17.5 (8.8)	4.32	.021

+Significance calculated by ANOVA. F based on 3 degrees of freedom.

ii) Outcome of Depression

Given the importance and prevalence of depression in adolescent anorexia nervosa, it is useful to look more carefully at the change in depression considered as a comorbid disorder in this cohort. Depression was measured in two ways. The interview measure used Feighner criteria, which could assign a diagnosis depressive disorder when the diagnostic criteria were met (Feighner et al, 1972). Using the Morgan-Russell system Feighner depression was scored zero on the Depression scale. Depression was also scored by self-report using the MFQ, for which the cut-off for disorder in psychiatric populations is 27 (Wood et al, 1995).

It can be seen from figure 5.2 that there is major reduction in the numbers of adolescents with Feighner depression. At T1 18 adolescents have depression but this falls to 8 by the end of treatment. There is also reduction in the numbers of adolescents with depressive symptoms, 15 having these initially and 7 by the end of treatment. These changes are statistically highly significant; comparing T1 with T4, multivariate analysis of variance repeated measures within subject design, F statistics based on (3, 33 degrees of freedom), $p=.000$. Despite these gains the figure does still show significant numbers with mood disturbance at the end of treatment. It is clear that adolescents with depression at the end of treatment have worse general outcome than those who are not depressed, as illustrated by table 5.5.

Fig 5.2

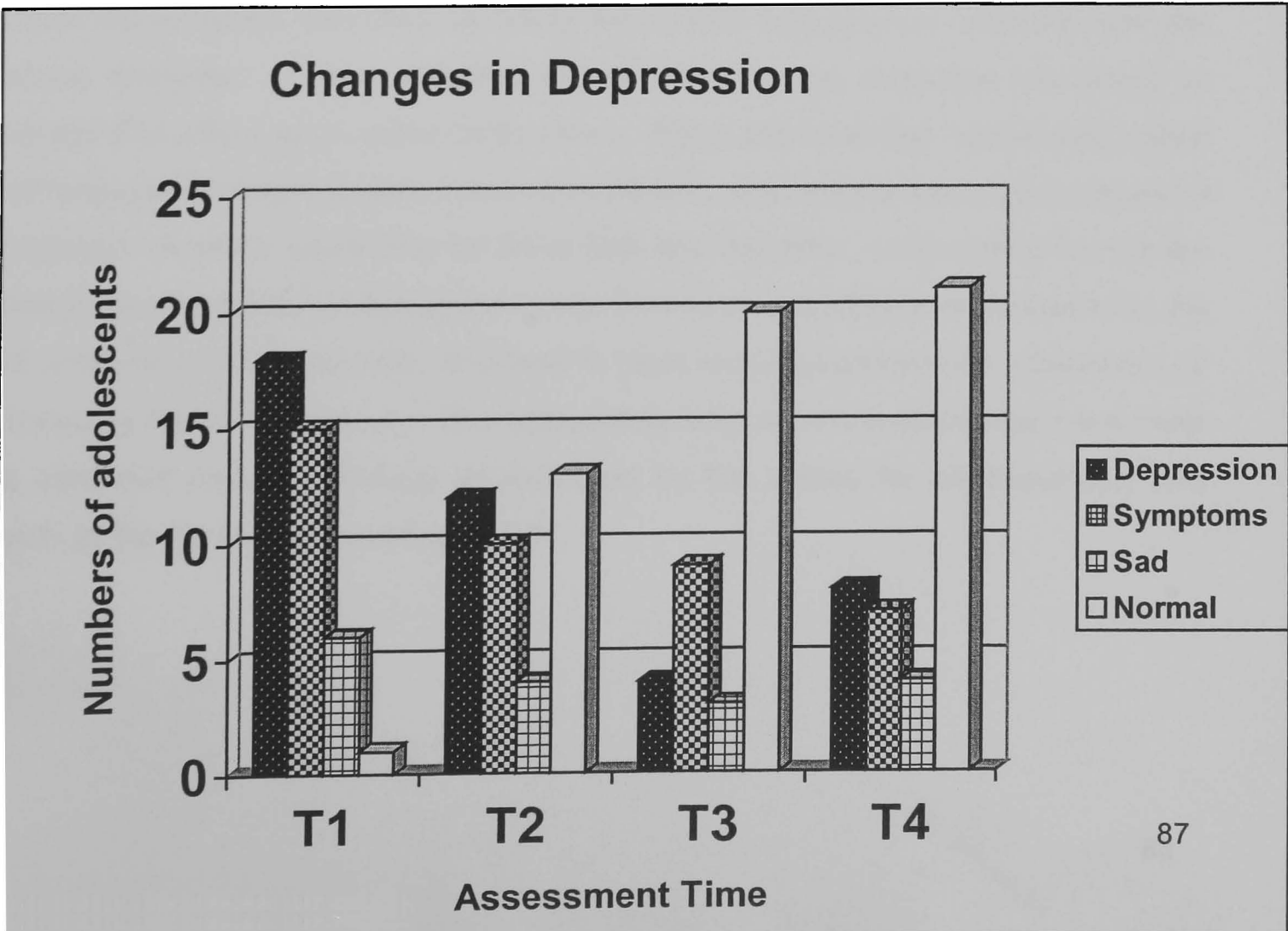


Table 5.5

Association between Levels of Depression at T4 and General Outcome at T4						
Outcome Variable	Feighner Depression	Depressive Symptoms	Sad	Normal	Statistics+	
	N=8 mean (SD)	N=7 mean (SD)	N=4 mean (SD)	N=21 mean (SD)	F value	p
Weight (kg)	44.3 (7.3)	45.1 (5.5)	51.0 (4.5)	50.1 (7.8)	1.39	.262
ABW	78.5 (16.2)	81.8 (11.9)	89.1 (9.7)	91.1 (11.0)	2.01	.132
BMI	16.6 (3.2)	17.1 (2.2)	19.2 (2.1)	19.4 (2.3)	2.20	.107
MRA nutritional	6.4 (3.9)*	7.6 (2.0)*	8.2 (3.3)	9.9 (2.2)*	2.03	.132
MRB menstrual	3.3 (5.3)**	3.3 (5.3)*	2.0 (4.0)	5.9 (5.5)+	.107	.749
MRC mental state	6.3 (2.1)*	8.0 (.00)	12.0 (.00)	12.0 (.00)*	72.58	.000
MRD psychosexual	5.7 (4.0)*	5.2 (4.2)*	5.4 (1.5)	9.7 (2.2)**	2.80	.059
MRE socioeconomic	6.1 (3.8)*	9.8 (1.3)	8.4 (1.0)	11.2 (1.2)*	9.56	.000
MRAOS	5.6 (1.6)*	7.0 (2.1)	7.2 (1.4)	9.9 (1.7)*	9.13	.000
MRF bulimia	11.6 (1.1)	11.1 (2.3)	9.0 (6.0)	11.9 (.65)	1.83	.162
MRF vomiting	10.5 (4.2)	12.0 (.00)	9.0 (6.0)	11.1 (2.4)	.865	.470
MRF laxative	11.2 (2.1)	11.1 (2.3)	9.7 (4.5)	12.0 (.00)	2.23	.105
Obsessionality	5.9 (3.8)	10.3 (1.6)	11.3 (1.5)	11.6 (2.3)	19.55	.000
Tension	5.0 (3.5)	9.3 (4.8)*	10.0 (2.3)	10.7 (2.3)	5.32	.005

+ Significance calculated by ANCOVA taking age, duration of illness, previous treatment, initial BMI (T1) for MR scales, and initial score of variable as covariates. F based on 3 degrees of freedom.
Data unavailable on *1, **2, + 4 subjects.

Computation of the association between depression and outcome has taken into account the variables identified as being associated with general outcome from the previous analyses. These variables are entered into the statistical calculation to eliminate their effect as possible confounders. When this is carried out the data reveal no differences in weight related outcomes between adolescents with various levels of depression. However correcting for initial BMI and the other confounding factors the adolescents who are depressed have worse final social adjustment as measured by the MRE socio-economic subscale, and tend to have worse psychosexual adjustment as indicated by the MRD subscale. The adolescents who are more depressed have more final comorbid psychopathology as indicated by the scales for obsessionality and tension at the T4 final assessment point.

Table 5.5 does not show associations for the questionnaire measures (eating attitudes, MFQ, MOCI and RSE) because up to 10 (25%) of these were not completed at the final assessment T4.

iii) Factors Associated with Depressive Outcome

a) Depression as a Continuous Variable

Investigation of factors associated with depression at T4 was carried out by investigating the association with background and illness factors present at T1. This was done by looking at depression at T4 as a continuous variable using the MFQ and Morgan-Russell depression scale and correlating with past factors shown to be relevant for outcome. Firstly correlation analysis of MFQ at T4 was carried out with the past factors (illness duration, lowest weight reached or past treatments) revealed no significant associations. However MFQ score at T4 was associated with T1 MFQ score ($r=.390$, $t=.027$), and initial EAT score ($r=.379$, $p=.033$). It was found as expected that adolescents with higher final MFQ scores had received more treatment sessions ($r=.536$, $p=.003$). It should be born in mind that the number of MFQ's returned at T4 was 32, and thus these limited findings need to be regarded with caution.

When correlation analysis was carried out with the MR depression scale at T4, again there were no significant associations with background factors (illness duration, lowest weight reached or past treatments). MR depression scale at T4 was associated with ABW at T1 ($\rho=.321$, $p=.044$), MR average score ($\rho=.362$, $p=.022$), and the MRE socio-economic subscale ($\rho=.403$, $p=.010$). Interestingly there was no significant association between MR depression at T4 and initial depression measured by either the MR depression scale or the MFQ. There was only a trend for the MR depression scale at T4 to be associated with the number of treatment sessions ($\rho=-.288$, $p=.084$). The sample size ($N=40$) was complete as information could be obtained for all adolescents at T4 regarding MR depression scale.

b) Depression as a Category

Analysis was also made of the association of past factors with depression as a category by comparing the means scores of past factors across different levels of depression. When the group was divided into four categories according to the Morgan-Russell depression scale, which uses Feighner criteria (Feighner et al, 1972) no background factors (illness duration, number of admission and lowest past weight) were

associated with final mood (T4). However a number of initial T1 illness variables were associated with the final level of depression, and the significant findings are shown in table 5.6. This shows that the adolescents who have more bulimia initially (a composite scale made up of bulimia, laxative and vomiting) had less depression at the end of treatment. Apart from this surprising finding, a number of measures of adjustment and symptomatic behaviour were in the expected direction with more initial symptoms being associated with depression at T4. Lower mood initially (interview rated MR depression and MFQ) was associated with lower mood at T4. There was a similar pattern for eating

Table 5.6

Association between Levels of Depression at T4 and Illness Factors at T1 (showing significant findings)						
Illness Variable At T1	Feighner Depression	Depressive symptoms	Sad	Normal	Statistics+	
	N=8 mean (SD)	N=7 mean (SD)	N=4 mean (SD)	N=21 mean (SD)	F value	p
Bulimia	10.5 (2.8)	10.3 (2.9)	9.0 (6.0)	5.4 (5.3)	3.44	.027
MRE	5.9 (3.8)	7.6 (2.8)	6.4 (3.3)	9.2 (2.2)	3.25	.033
MR average	4.8 (1.8)	5.1 (1.6)	4.2 (1.9)	6.2 (1.4)	2.78	.055
MR Depression	1.0 (1.8)	2.3 (3.1)	7.0 (2.0)	3.2 (3.2)	3.94	.016
MFQ	36.4 (6.1)	26.1 (8.1)	15.0 (11.7)	26.5 (13.6)	3.27	.032
EAT	61.3 (30.3)	50.3 (21.6)	19.2 (5.2)	51.4 (23.2)	2.89	.049

+ ANOVA for T1 values, F based on 3 degrees of freedom.

attitudes, which were more abnormal in the group that had more depression at T4. The findings regarding the MRAOS are given because they just fail to reach statistical significance. There was significantly poorer socio-economic adjustment (MRE socio-economic subscale) initially amongst those who had depression at T4. The scores for the group who had sadness appear not to follow the trend set by the other categories, and this may be caused by idiosyncratic scoring for some in this group and the small number of respondents.

The validity of the measures is indicated by the high correlation between the MFQ score and the MR depression scale at T1 ($\rho = -.489, p = .001$).

3 Treatment Dropout and Outcome

Although treatment was offered to all adolescents and families for one year, there were 11 dropouts. Of the 11 dropouts, 4 discontinued treatment within three months and had a mean number of sessions of 3.3 (SD 4.4), while 7 dropped out after more than three months and had a mean of 12 sessions (SD 4.4). Overall those who dropped out had fewer treatment sessions than those who completed treatment (completers had a mean of 18.9 sessions (SD 6.5), compared with dropouts mean 8.8 (SD 5.6), $t=4.47$, $p=.000$).

Treatment dropout was not associated with differences in background variables such as age, illness duration or previous treatments. There were also no differences in illness variables such as BMI, MR average score, eating attitudes and mood at T1 between those who later dropped out and those who completed treatment.

An important issue is whether treatment discontinuation is associated with worse outcome. Table 5.7 summarizes the association between outcome and treatment dropout. It can be seen that the treatment dropouts had worse general outcome using the MRAOS. Specifically they had worse outcome in relation to weight gain, and mental state measured by the MRC subscale and tension scale.

Adolescents in the dropout group had completed too few questionnaires for the final outcome assessment for this data to be used in analysis.

In order to show the changes across time for the dropouts and treatment completers, the data has been displayed as a bar chart across all four assessment points (see fig 5.3). The trajectory for those who complete treatment to have better outcome appears to start early. This is verified by comparing the changes in BMI between T1 and T2, provided in table 5.8.

When outcome is looked at with regard to categories, 21 of the 29 who completed treatment achieved good outcome, compared with only 4 of the 11 who did not complete treatment, which is a significant difference (chi square $p=.035$).

Table 5.7

Treatment Dropout and Final Outcome (T4)					
Variable	Treatment completers	Dropouts	Corrected difference between completers and dropouts	Statistics+	
	N=29 mean (SD)	N=11 mean (SD)	B (SE)	F value	p
Weight (kgs)	48.9 (7.2)	46.3 (7.9)	4.08 (2.15)	3.62	.066
ABW	88.8 (13.3)	82.3 (11.6)	7.61 (3.61)	4.43	.043
BMI	18.9 (2.7)	17.4 (2.4)	1.79 (.78)	5.24	.028
MRA nutritional	9.0 (3.1)	7.7 (2.5)***	.91 (1.10)	3.13	.021
MRB menstrual	4.6 (5.3)***	4.0 (5.6)+	1.04 (2.13)	.24	.628
MRC mental state	10.7 (2.2)	8.4 (3.1)**	2.47 (.92)	7.20	.012
MRD psychosexual	8.0 (3.0)*	6.6 (5.2)++	2.14 (.99)	4.70	.039
MRE socio-economic	9.9 (2.3)	9.1 (3.7)**	.71 (.86)	.686	.414
MRAOS average	8.6 (2.4)	7.3 (2.6)**	1.51 (.66)	5.23	.029
MRF bulimia	11.5 (2.3)	11.2 (1.9)	.88 (.67)	1.71	.201
MRF vomiting	10.5 (3.5)	12.0 (.00)	-1.18 (.89)	1.79	.190
MRF laxative	11.7 (1.7)	10.9 (2.40)	.75 (.70)	.114	.294
Depression	8.6 (4.7)	5.8 (5.2)	2.53 (1.70)	2.20	.148
Obsessionality	10.7 (2.5)	8.7 (3.9)	1.06 (.98)	1.19	.283
Tension	10.1 (2.5)	6.8 (5.3)	3.74 (1.26)	8.85	.006

+ Significance calculated by ANCOVA taking age, duration of illness, previous treatment, initial BMI for MR scales, and T1 values of each measure as covariates. F based on 1 degree of freedom.

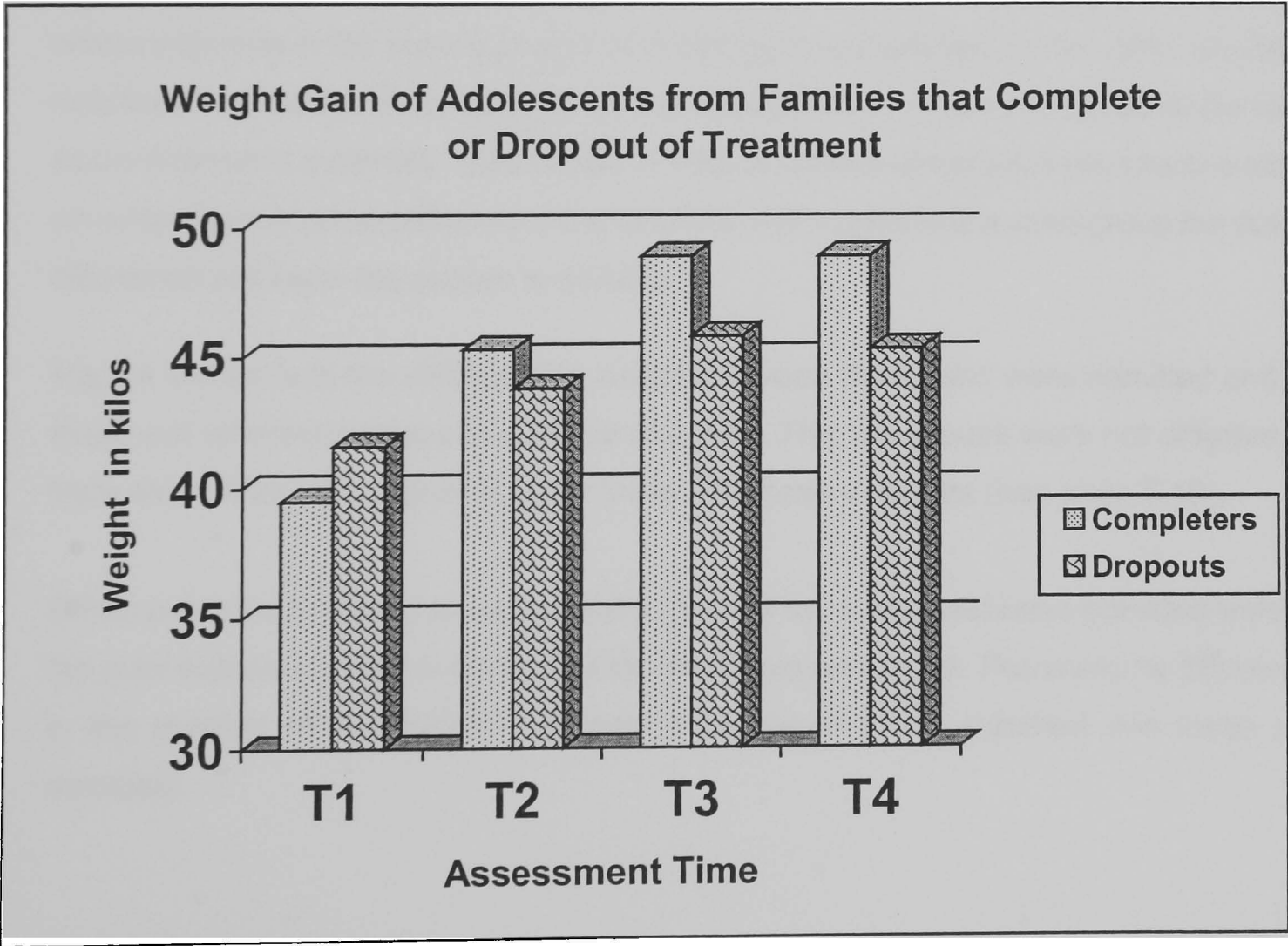
Data unavailable on: * 1, ** 2, *** 3, + 4, ++ 8 cases.

Table 5.8

Treatment Dropout and Differences in BMI comparing T1 and T2					
Variable	Treatment completers	Dropouts	Corrected difference between completers and dropouts at T2	Statistics+	
BMI	N=29 mean (SD)	N=11 mean (SD)	B (SE)	F value	p
T1	15.3 (1.9)	15.8 (2.1)	1.23 (.61)	4.01	.051
T2	17.6 (1.8)	16.6 (2.3)			

+ Significance calculated by ANCOVA taking age, duration of illness, previous treatment, initial T1 BMI as covariates. F based on 1 degree of freedom.

Figure 5.3



4 Admission During Treatment

Four adolescents required admission for inpatient management of their anorexia nervosa and associated difficulties. They made stormy progress during the year and the lengths of admission for each adolescent are 1.75, 2.5, 5.0 and 5.5 months (mean 3.7 (SD 1.84). At the time of initial assessment the four adolescents were not different from the others with regard to their age, illness duration, or their past treatment experiences. At initial assessment those who were later admitted had lower ABW at T1 mean 64.2 (SD 11.6), compared with 75.4 (SD 9.1) amongst those not admitted ($t=-2.26$ $p=.029$). There was also a difference in initial BMI, mean 13.3 (SD 1.9) amongst those admitted compared with mean 15.6 (1.9) for those not admitted ($t=-2.26$, $p=.026$). The Morgan Russell scales were not different between the groups at T1. Regarding the self-rating questionnaires, it was found that the adolescents admitted had lower initial T1 EAT scores (mean 27.9 (SD 6.3), compared with 52.4 (SD 25.5) for those not admitted, $t=-4.63$, $p=.000$).

Table 5.9 shows that the adolescents who were admitted for in-patient management worse outcome in the important area of weight gain as indicated by BMI, ABW and MRA nutritional subscale. They had poorer socio-economic outcome as indicated by the MRE socio-economic subscale. Surprisingly in view of these findings admission had no effect on overall outcome as reflected in the MRAOS. Although this is a small group the size of difference between the groups is striking.

Fig 5.4 shows how the difference in weight between those who were admitted and those not admitted increases over the one year. The two groups were not different from each other with regard to other initial T1 illness variables (see table 5.10).

When outcome is looked at categorically, 3 out of the 4 who had been admitted were in the poor outcome group at the time of the final assessment T4. There was no difference in the number of out-patient treatment sessions of those admitted and those not admitted.

Table 5.9

Association between Admission During Treatment Period and General Outcome at T4					
Outcome Variable	Admitted Group	Not Admitted Group	Corrected difference between admitted and not admitted group	Statistics+	
	N=4 mean (SD)	N=36 mean (SD)	B (SE)	F value	p
Weight (kg)	41.0 (10.7)	48.9 (6.6)	5.11 (3.31)	2.37	.133
ABW	72.5 (19.7)	88.6 (11.4)	12.19 (5.86)	4.32	.045
BMI	15.3 (4.1)	18.8 (2.3)	2.58 (1.27)	4.11	.050
MRA nutritional	5.3 (4.6) *	8.9 (2.7) **	3.41 (1.51)	5.09	.032
MRB menstrual	6.0 (8.5) **	4.4 (5.2)+	-5.87 (3.70)	2.52	.124
MRC mental state	6.6 (2.3) *	10.5 (2.4) *	3.23 (1.60)	4.09	.052
MRD psychosexual	10.0 (.0) **	7.5 (3.6) **	-1.73 (2.19)	.623	.436
MRE socio-economic	7.5 (2.8) *	9.9 (2.6) *	3.30 (1.33)	6.30	.017
MRAOS	7.2 (3.1) *	8.4 (2.5) *	1.31 (1.20)	1.19	.284
MRF bulimia	9.8 (2.9)	11.5 (2.0)	2.03 (1.02)	3.93	.056
MRF vomiting	9.0 (6.0)	11.2 (2.6)	2.08 (1.41)	2.16	.151
MRF laxative	10.5 (3.0)	11.6 (1.8)	1.43 (1.13)	1.59	.216
Depression	2.0 (2.3)	8.4 (4.7)	4.60 (2.68)	2.95	.095
Obsessionality	10.5 (1.7)	10.1 (3.2)	-.63 (1.54)	.166	.687
Tension	8.0 (5.6)	9.4 (3.5) *	.59 (2.12)	.079	.780

+Significance calculated by ANCOVA taking age, duration of illness, previous treatment, initial BMI (T1) for MR scales, and initial score of variables as covariates.

Data unavailable on: * 1, ** 2, + 5 cases.

Figure 5.4

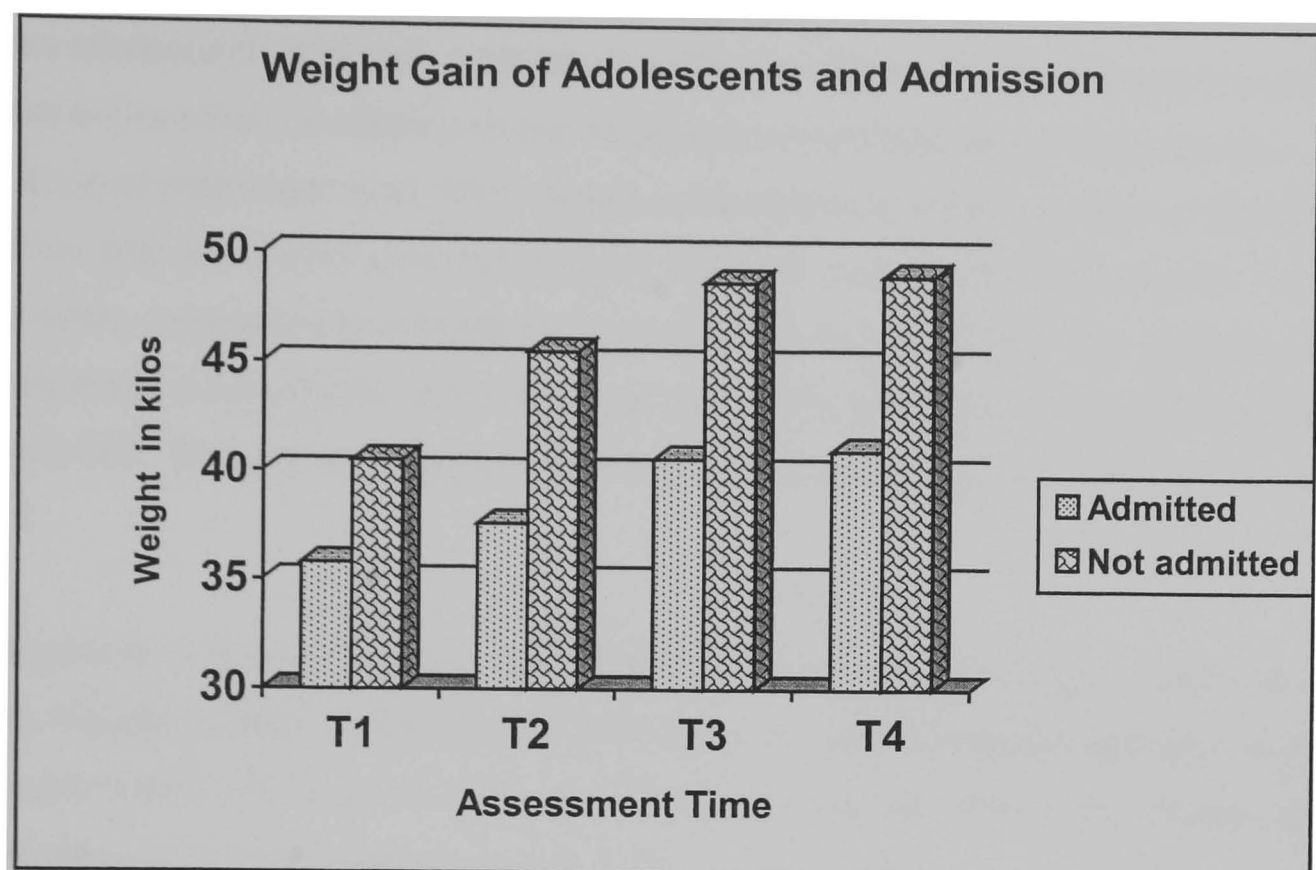


Table 5.10

Weight Changes Comparing Adolescents Admitted and Those Not Admitted at T1 and T4				
Variable	Admitted Adolescents	Non-Admitted Adolescents	Statistics+	
	N=4 mean (SD)	N=36 mean (SD)	t value	p
Weight in kilos				
T1	35.8 (4.2)	40.5 (6.5)	-1.39	.171
T4	41.0 (10.7)	49.0 (6.6)	-2.15	.038
ABW				
T1	64.2 (11.6)	75.4 (9.1)	-2.26	.029
T4	72.5 (19.7)	88.6 (11.4)	-2.15	.017
BMI				
T1	13.4 (1.9)	15.6 (1.9)	-2.32	.026
T4	15.3 (4.1)	18.8 (2.3)	-2.70	.010

+ Statistics for difference between admitted or not admitted adolescents at each assessment time.

5 Deliberate Self-Harm

Four adolescents carried out deliberate self-harm (DSH) by overdose or self-mutilation, and one adolescent used both methods of self-harm. These four adolescents were not different to the others in relation to the background variables age, illness duration and experience of past treatments. With regard to initial illness variables, the only significant difference was that those who carried out DSH had, surprisingly, higher MRC mental state scores, meaning less mental state disturbance (which overall was largely made up of depressive symptoms). Amongst those who harmed themselves the MRC score at T1 was 8 (SD .00), and amongst those who did not the score was 7 (SD 2.0), $t=-.3.00$, $p=.005$.

With regard to outcome, this has been looked at for the weight variables and with the Morgan-Russell scales. It can be seen from table 5.11 that deliberate self-harm tended to be associated with less weight gain. It was associated with more mental state abnormalities and more laxative abuse at T4.

When outcome was looked at by categories for adolescents who had shown DSH, they were all in the poor outcome group, while 11 of the 36 who had not shown DSH were in this group, a statistically significant difference (Fisher's exact test, $p=.015$). There was no difference in the number of sessions they had attended.

Table 5.11

Association between Deliberate Self-Harm and General Outcome at T4					
Outcome Variable	DSH Group	No DSH Group	Corrected difference between DSH and no DSH group	Statistics+	
	N=4 Mean (SD)	N=36 Mean (SD)	B (SE)	F value	p
Weight (kg)	43.4 (4.0)	48.7 (7.5)	6.29 (3.18)	3.92	.056
ABW	77.5 (7.3)	88.0 (13.2)	9.59 (5.48)	3.06	.089
BMI	16.3 (1.2)	18.7 (2.7)	2.37 (1.18)	4.01	.053
MRA nutritional	6.6 (1.6)	8.9 (3.0) ***	2.12 (1.30)	2.67	.112
MRB menstrual	*4.0 (6.9)	4.5 (6.9)+	-1.34 (3.20)	.176	.679
MRC mental state	8.0 (3.3)	10.5 (2.4) **	2.75 (1.35)	4.18	.049
MRD psychosexual	6.3 (3.4)	7.8 (3.6)*	1.33 (1.38)	.941	.340
MRE socioeconomic	9.4 (1.5)	9.7 (2.8) ****	-.59 (1.22)	.236	.631
MRAOS	7.1 (2.5)	8.4 (2.5) **	1.30 (.96)	1.82	.187
MRF bulimia	10.5 (3.0)	11.5 (2.1)	1.68 (.98)	2.97	.094
MRF vomiting	9.7 (4.5)	11.1 (2.9)	.73 (1.35)	.29	.593
MRF laxative	9.0 (3.5)	11.7 (1.5)	2.77 (.95)	8.49	.006
Depression	5.0 (5.0)	8.1 (4.9)	2.46 (2.54)	.936	.340
Obsessionality	7.5 (3.9)	10.5 (2.8)	1.80 (1.42)	1.61	.214
Tension	9.0 (6.0)	9.3 (3.5)*	-.22 (1.97)	.013	.911

+Significance calculated by ANCOVA taking age, duration of illness, previous treatment, initial BMI (T1) for MR scales, and initial score of variables as covariates. F based on 1 degree of freedom.

Data unavailable on *1, ** 2, *** 3, **** 4, + 6 cases.

Changes in Parental Expressed Emotion and Outcome

1 Association Between Expressed Emotion and Background and Illness Characteristics

Since EE, especially initial EE, was expected to be an important predictor of treatment outcome, the first analyses concern its association at T1 with background factors. Since hostility was so rarely shown in the family interviews (by one father to daughter, and five mothers to daughters) statistical associations regarding this measure of EE could not be meaningfully investigated and are excluded from the results.

Background Characteristics

Firstly initial T1 parental EE was compared between nuclear and other family structures. The only significant difference was in the nuclear families mothers made fewer positive remarks (Mean rank 18.25) to the adolescents than if they were in other family structures (Mean rank 25.75) (Mann Whitney U 105.00, $p=.046$). Age of the adolescent was found to be significantly associated with only one aspect of EE. It was found that older adolescents had fathers who were rated as showing less emotional overinvolvement ($\rho=-.474$, $p=.002$). More previous treatment was associated with more maternal critical comments to the adolescent ($\rho=.317$, $p=.046$).

Illness Characteristics

1. Weight

Association between initial BMI and parental EE was investigated. There was no association between BMI and fathers' EE to the adolescents or fathers' EE to the mothers. However adolescents' BMI was associated with maternal critical comments to her ($\rho=-.350$, $p=.027$), but not other dimensions of EE. Maternal EE to the father showed no association with daughters' BMI.

2. Bulimia

The frequency of initial bulimic symptoms showed significant correlation with initial T1 maternal critical comments to father ($\rho=.368$, $p=.021$), i.e. fewer bulimic behaviours occurred when mothers were more critical to fathers.

Given this surprising finding, there was further investigation by dichotomising the group into two categories identified by the presence or absence of bulimic features at the initial

assessment. Differences between these two groups for illness variables and EE was looked for. No significant differences were found in EE according to whether bulimic features were present or absent.

3. Illness Duration

There was an association between illness duration and some dimensions of parental EE. Fathers' warmth to the patient was negatively correlated with illness duration ($\rho = -.356$, $p = .026$). For mothers speech, illness duration was positively correlated with critical comments ($\rho = .351$, $p = .026$). Illness duration did not correlate significantly with any measure of EE between parents.

2 Changes in Expressed Emotion

It can be seen from table 5.12 that there was significant reduction in maternal critical comments and a trend to reduction of emotional overinvolvement to the adolescent sufferers. Maternal warmth to fathers significantly increased during the year. For fathers (see table 5.13) there were significant reductions of critical comments to spouses and to the adolescent sufferers. There was also significant increase in warmth to spouses during the year.

3 EE and Outcome

i) EE and Outcome as a Continuous Variable

Association between initial parental EE and final outcome using BMI and the MRAOS as measures was investigated by correlation. Surprisingly there were no significant associations. When the initial maternal and paternal critical comments were added again there was no association with outcome using BMI and the MRAOS. Associations between initial EE and outcome can be investigated by categorizing EE into high and low. This may confirm findings when EE is looked at as a continuous variable and also this is an important way of identifying possible predictors of outcome. EE was dichotomized using initial maternal critical comments, selecting different thresholds for categorizing into high and low. The threshold was set at 2, 3 and 4 critical comments, but no association was found with categories of general outcome. The same procedure was carried out with paternal critical comments, but again there was no association with categorical outcome.

Table 5.12. Maternal Expressed Emotion to Patient and Spouse

Mothers' Expressed Emotion						
Variable	T1	T2	T3	T4	Statistics	
	N=40 Mean (SD) Median (min,max)	N=37 Mean (SD) Median (min,max)	N=32 Mean (SD) Median (min,max)	N=30 Mean (SD) Median (min,max)	F ¹ value	p
CC to patient	2.5 (2.5) 1.5 (0,10)	1.3 (2.4) 0.0 (0,10)	1.6 (2.8) 0.0 (0,11)	1.4 (2.0) 1.0 (0,8)	7.30	.001
CC to father	1.4 (2.4) 1.0 (0,12)	.58 (1.4) 0 (0,6)	.35 (.98) 0.0 (0,5)	.48 (1.6) 0.0 (0,8)	2.08	.131
EOI to patient	1.3 (1.2) 1.0 (0,4)	1.0 (1.1) 1.0 (0, 4)	.72 (.77) 1.0 (0,3)	1.0 (.93) 2.0 (1, 3)	2.72	.066
EOI to father	.10 (.50) 0.0 (0,3)	.03 (.17) 0.0 (0,1)	.00 (.00) 0.0 (0,0)	.04 (.19) 0.0 (0,1)	1.00	.327
Wa to patient	2.5(1.3) 3.0 (0,6)	2.5 (1.3) 3.0 (0,5)	2.6 (1.4) 2.5 (0,5)	2.6 (1.4) 3.0 (0,4)	1.02	.401
Wa to father	1.1 (1.0) 1.2 1.0 (0,3)	1.3 (1.2) 1.0 (0,4)	1.6 (1.4) 2.0 (0,4)		6.07	.004
PR to patient	1.1 (1.5) 1.0 (0,8)	.51 (1.0) 0.0 (0,5)	.41 (.66) 0.0 (0,3)	.53 (1.1) 0.0 (0,4)	1.33	.287
PR to father	.15 (.36) 0.0 (0,1)	.13 (.35) 0.0 (0,1)	.09 (.30) 0.0 (0,1)	.11 (.32) 0.0 (0,1)	.12	.948

N regarding mothers' EE to fathers: T1 N=39, T2 N= 36, T3 N=31, T4 N=27
N=35

Multivariate analysis of variance repeated measures within subject design. F¹ statistics based on (3,25) degrees of freedom. F² statistics based on (3,22) degrees of freedom.

Key: CC critical comments, EOI emotional overinvolvement Wa warmth PR positive remarks. NA statistics not available because too few scored any EOI

Table 5.13. Paternal Expressed Emotion to Patient and Spouse

Fathers' Expressed Emotion						
Variable	T1	T2	T3	T4	Statistics	
	N=39 Mean (SD) Median (min,max)	N=36 Mean (SD) Median (min,max)	N=29 Mean (SD) Median (min,max)	N=27 Mean (SD) Median (min,max)	F ² value	p
CC to patient	2.1 2.4) 1.0 (0,8)	.64 (1.1) 0.0 (0,4)	.83 (1.2) 0.0 (0,5)	.59 (1.3) 0.0 (0,6)	3.80	.025
CC to mother	1.0 (1.5) 1.0 (0,5)	.94 (2.0) 0.0 (0,9)	.37 (.90) 0.0 (0,3)	.48 (1.1) 0.0 (0,4)	3.06	.049
EOI to patient	.64 (.96) 0 .0 (0, 3)	.68 (.90) 0.0 (0,3)	.45 (.78) 0.0 (0,3)	.74 (.86) 1.0 (0,3)	.92	.446
EOI to mother	.02 (.16) 0.0 (0, 1)	.00 (00) 0.0 (0,0)	.00 (00) 0.0 (0,0)	.00 (00) 0.0 (0,0)	NA	NA
Wa to patient	1.9 (1.5) 2.0 (0,5)	2.4 (1.2) 3.0 (0,5)	2.2 (1.3) 3.0 (0,4)	2.2 (1.6) 3.0 (0,4)	1.51	.240
Wa to mother	.72 (.79) 1.0 (0, 3)	1.0 (1.2) 1.0 (0,4)	1.4 (1.3) 2.0 (0,4)	2.0 (1.5) 2.0 (0,4)	6.13	.003
PR to patient	.59 (1.1) 0.0 (0, 5)	.67 (1.0) 0.0 (0,4)	.31 (.54) 0.0 (0,2)	.63 (1.2) 0.0 (0,4)	.317	.813
PR to mother	.10 (.30) 0.0 (0,1)	.05 (.23) 0.0 (0,1)	.00 (00) 0.0 (0,0)	.11 (.42) 0.0 (0,4)	1.74	.188

Multivariate analysis of variance repeated measures within subject design. F¹ statistics based on (3,25) degrees of freedom. F² statistics based on (3,22) degrees of freedom.

Key: CC critical comments, EOI emotional overinvolvement Wa warmth PR positive remarks. NA statistics not available because too few scored any EOI

ii) EE and Outcome Categories

Possible associations between initial parental EE and outcome categories were investigated in two ways. Firstly, the levels of parental EE were compared at each assessment time for the two groups according to the final outcome of the adolescents, using the categories good and intermediate, or poor outcome. This showed a surprisingly small number of associations, and it was also striking that parental critical comments was not associated with outcome. It was found that at T2 maternal emotional

overinvolvement to the patient was significantly less in the good outcome group (good outcome group mean rank 15.12, compared with mean rank 22.32 in the poor outcome group, Mann-Whitney U 86.50, $p=.030$). At T3 it was found for the good outcome group that paternal warmth to mother, mean rank 12.70, was less than paternal warmth to the mother in the poor outcome group, mean rank 20.11, Mann-Whitney U 44.00, $p=.024$. At T3 it was found for the good outcome group that paternal emotional overinvolvement to the patient, mean rank 13.30, was less than paternal emotional overinvolvement to the patient in the poor outcome group, mean rank 18.78, Mann-Whitney U 56.00, $p=.049$.

In view of the surprising lack of association between patients' outcome and parental critical comments, this was investigated further by analysis of covariance, comparing the two categories of outcome and selecting the measures of EE at T4 as dependent variables. Illness duration, previous treatment and the initial value of the T4 variable selected were the covariates. Again this showed no difference between paternal or maternal critical comments to patients at T4 according to the patients' outcome. There was also no association when fathers' warmth to mother was investigated in this way.

iii) Change in EE and Outcome

The suggestion from the pilot study was that the good outcome group experienced reduction of parental critical comments during the course of treatment while the poor outcome group did not experience this change (Le Grange et al, 1992a). In view of this the pattern of change of parental EE and outcome was looked for. This was firstly looked for by seeing if there was a correlation between changes in EE and final outcome using BMI and the MRAOS as outcome measures. The changes in EE were calculated by looking at differences between T1 and T2 (N=37). No significant associations were found. When changes in EE between T1 and T4 were correlated with general outcome measures, it was found that the MRAOS at T4 showed significant association with the level of increased warmth from fathers to mothers ($\rho=.393$, $p=.042$). There was no identified correlation between changes in EE and final BMI.

When outcome is looked at by category, there were differences in the size of change between T1 and T2 with regard to paternal criticism to the mother. In the good/intermediate outcome group, paternal criticism to mothers reduced by mean .30

(SD1.08), compared with an increase of mean .67 (SD 1.67) in the poor outcome group ($t=2.073$, $p=.046$). There were no other differences in the changes of EE between T1 and T2. Changes in EE were also looked for between T1 and T4. The only significant difference was that in the good/intermediate outcome group the level of maternal critical comments to the father reduced by mean 1.21 (SD 1.93), while in the poor outcome group the reduction was mean .12 (SD .64), $t=2.18$, $p=.039$. However these results should be treated with caution in view of the sample attrition, with 8 of 15 from the poor outcome group, and 20 of 25 from the good/intermediate outcome group participating in family interviews at T4.

4 EE and Depression

Investigation was carried out of the association between initial parental EE and adolescent depression at T4. This was done firstly by correlating the Depression score and the MFQ score and T1 EE. This showed that paternal warmth to mother was associated with the Depression score ($\rho=.389$, $p=.014$), and also the MFQ score ($\rho=-.436$, $p=.014$). Maternal critical comments to the father was associated with the adolescents' Depression score ($\rho=-.395$, $p=.013$), with more maternal criticism being associated with more depression for the adolescents. Maternal criticism to the adolescent was associated with the Depression score ($\rho=-.315$, $p=.048$), meaning that adolescents were more depressed if mothers showed more critical speech. There was no association between maternal or paternal critical comments to the patient or between the spouses and the MFQ score.

Association between high initial T1 parental criticism and Feighner depression at T4 was also looked for using different thresholds. No association was found between paternal critical comments and specific thresholds chooses at 2, 3 or 4 critical comments. However initial T1 maternal critical comments did show an association with Feighner or maternal critical comments when the threshold was set at 1 or 3 critical comments in the interview. In order to investigate this further association between T4 EE using critical comments and Feighner depression at that time was also looked for. No significant associations were found. However this must be taken with caution

Table 5.14

Initial Maternal Critical Comments Categorised as High or Low and Final T4 Feighner Depression			
Level of Maternal Critical Comments at T1	Depression status at T4		Statistics
	N=32 No depression	N=8 Feighner Depression	Chi-square
0	11	0	.051
1 or more	21	8	
0-1	18	3	.342
2 or more	14	5	
0-2	21	2	.038
3 or more	11	6	
0-3	23	4	.237
4 or more	9	4	

because of the reducing number of family interviews carried out as the study progressed (by T4, 4 in the depressed group, 26 in the non-depressed group).

Investigation of possible association between EE when categorised into high and low using various cut points for critical comments, and adolescents' depression on the MFQ, did not reveal significant associations.

Changes in EE between T1 and T2, and also T1 and T4, and their association with the presence of Feighner depression at T4 were looked for. There was no association between the changes between T1 and T2 and final depression. Looking at differences between T1 and T4, there was a trend for the reduction in paternal critical comments to the adolescent to reduce more is those who do not have depression, mean reduction 2.08 (SD 2.76), compared with an increase for those who are depressed mean .75 (SD 2.06), $t=-1.95$, $p=.063$. Again these findings need to be treated with caution as there was a high proportion of the depressed group 4 of 8 who did not participate in the family interview at T4, while 23 of 32 of the non-depressed group participated.

5 EE and Treatment Dropout

Given the finding from earlier studies that parental EE was associated with dropout (Szmukler et al, 1985) the possibility of an association was investigated on this sample. The families that dropped out were disproportionately likely to refuse family interviews used for rating expressed emotion throughout one year study period. In view of this, EE data comparing the groups can only be used up to the second assessment (T2). Table 5.15 illustrates this.

Comparison of the mean EE at initial assessment T1 between the two groups surprisingly showed only two differences. The dropouts were from families in which mothers showed more warmth to fathers (mean rank 26.45), completers mean rank 17.46, Mann –Whitney U 83.0, p=.019). Mothers from families that dropped out also showed more positive remarks to fathers (mean rank 24.09, completers mean rank 18.39, Mann –Whitney U 109.0, p=.025).

Table 5.15

Treatment Dropout and Participation in Family Interviews				
	Numbers of families participating in assessments at different assessment points			
Completer/dropout	T1	T2	T3	T4
Completer (n=29)	29	28	28	27
Dropout (n=11)	11	9	4	3

In view of the expectation that high parental criticism and emotional overinvolvement would be associated with dropout, this was looked at in terms of the pattern of change between T1 and T2. There was no association between the groups with regard to the change in parental criticism or overinvolvement to the adolescent or each other. When initial T1 EE was categorised into high and low, on the basis of levels of maternal or paternal critical comments with thresholds set at 2, 3 or 4, there was still no association with treatment dropout.

6 EE and Admission

There were only two significant differences in initial EE comparing families in which the patient was admitted with those in which she was not. Fathers' warmth to mother was higher in the families in which the adolescent was not admitted (mean rank 21.20) than amongst those admitted (mean rank 9.50, Mann –Whitney U 28.0, $p=.034$). Mothers' positive remarks to fathers were lower in the families in which the adolescent was not admitted (mean rank 19.23) than amongst those admitted (mean rank 26.75, Mann –Whitney U 43.0, $p=.046$) In view of the small numbers it is not appropriate to look at changes in EE according to whether or not the adolescent was admitted.

7 EE and Deliberate Self-Harm

The only significant difference in initial EE comparing families in which the patient showed deliberate self-harm with those in which she did not concerned mothers' positive remarks to fathers, which was lower amongst those who did not carry out deliberate self-harm admitted (mean rank 19.23) than amongst those who did show deliberate self-harm (mean rank 26.75, Mann –Whitney U 43, $p=.046$). In view of the small numbers it is not appropriate to look at changes in EE according to whether or not the adolescent was admitted.

The Prediction of Outcome

The previous statistical analyses have all been based on tests of association. It is very useful to analyze the data to identify predictive factors. This is important because although many associations have been described it is unclear which are correlates of outcomes, or epiphenomena, and which factors will independently predict outcome. This section describes the results of regression analysis by entering into the models likely predictive factors identified by the previous correlation analysis.

i Prediction of General Outcome

General outcome can be described using BMI, categories of outcome, and the MRAOS.

1) *Prediction of BMI*

The variables added to the stepwise forward stepwise multiple regression analysis were identified from the correlation analysis. The variables entered for the first analyses were age and initial BMI, which showed significant correlation with T4 BMI. When treatment dropout was added, this was included in the model. Together these three variables explained 35% of the variance in outcome, as can be seen from table 5.16.

Table 5.16

Forward stepwise multiple regression analysis on BMI at T4 of individual and treatment variables at T1				
Variable	B	SE B	p	adjusted r ²
BMI	.695	.176	.000	.189
Age	-.552	.222	.017	.276
Treatment dropout	-.898	.383	.025	.355

When EE was added to these three variables the only measure that was retained was maternal warmth to the father at T1, and this displaced treatment dropout, as can be seen from table 5.17.

Table 5.17

Forward stepwise multiple regression analysis on BMI at T4 of individual variables and EE at T1				
Variable	B	SE B	p	adjusted r ²
BMI	.677	.177	.001	.191
MWF	-.808	.344	.025	.284
Age	-.506	.228	.033	.354

Key MWF: mother’s warmth to father

These three variables also explained 35% of the variance. Surprisingly parental critical comments were not related to final BMI.

2) *Prediction of Final MRAOS*

Entering into the stepwise forward multiple regression analysis variables identified from the correlation analysis, MR E socio-economic subscale and age and initial BMI were retained. Persistence or dropout in treatment was retained in the model, and together with age, initial BMI and MR E socio-economic subscale explained 50.7% of the variance in outcome, as can be seen from table 5.18. Interestingly adding the initial MRAOS in place of the MR E subscale resulted in the latter being excluded but only a very slightly increased predictive power of outcome: the four factors MRAOS, age, BMI and treatment persistence or dropout explained 51.4% of the outcome variance.

EE was excluded from the model. Given that the MRAOS requires a large amount of information, one can say that the most parsimonious model is that in table 5.76, with four variables explaining more than half of the general outcome variance.

Table 5.18

Forward stepwise multiple regression analysis on MRAOS at T4 of individual variables at T1				
Variable	B	SE B	p	adjusted r ²
MRE socio-economic subscale	.274	.103	.012	.195
Age	-.608	.179	.001	.349
BMI	.504	.163	.004	.449
Treatment dropout	-.747	.334	.032	.507

ii Prediction of Depression

Using the MR depression scale at T4 as the dependent variable, it was shown that of the variables correlated with this scale, MR socio-economic subscale was retained in the model obtained by stepwise forward multiple regression. This explained 15.5% of the outcome variance of depression. Initial illness variables including initial MR depression scale score and MFQ were excluded. When parental EE was entered, the only variable that explained more of the depression outcome variance was high paternal

critical comments. With the threshold set at four (meaning four or more critical comments were made at the initial family interview), and with the MRE socio-economic subscale score, 23.5% of the outcome of depression variance was explained as can be seen from table 5.19.

Table 5.19

Forward stepwise multiple regression analysis on MR depression scale at T4 of variables at T1				
Variable	B	SE B	p	adjusted r ²
MRE socio-economic subscale	.702	.237	.005	.13
High paternal cc to patient	3.614	1.513	.022	.235

Regression analyses on the MFQ score at T4 was carried out. The MRE socio-economic subscale, initial MFQ and the change in warmth from the mother to patient between T1 and T2 were retained in the model. Together these three variables explained 35.6% of the depression outcome variance, as can be seen from table 5.20. However these results should be treated with caution because only 32 MFQs were returned at T4

Table 5.20

Forward stepwise multiple regression analysis on MFQ score at T4 of variables at T1				
Variable	B	SE B	p	adjusted r ²
MRE socio-economic subscale	-1.380	.781	.089	.155
MWP Change T1-T2	-4.166	1.475	.009	.247
MFQ score at T1	.395	.167	.026	.356

iii Prediction of Treatment Dropout

Prediction of treatment dropout was computed by stepwise forward logistic regression. Amongst the illness variables, it was found that the size of the change in BMI between T1 and T2 was a predictor of dropout, as can be seen from table 5.21. When maternal warmth to father at T1 is added, this is retained in the equation, $p=.0423$ and BMI T1-T2 change is excluded, $p=.0516$. Other EE variables are excluded from the equation.

Table 5.21

Forward stepwise logistic regression analysis on treatment dropout of variables at T1			
Variable	B	SE B	p
BMI change T1-T2	-.469	.228	.0398

iv Prediction of Psychiatric Admission

This was predicted only by the extent of change in BMI between T1 and T2, as can be seen from table 5.22. EE did not predict admission. Only four adolescents were admitted during the one-year of treatment so these results should be treated with caution.

Table 5.22

Forward stepwise logistic regression analysis on psychiatric admission of change in BMI between T1 and T2			
Variable	B	SE B	p
Change in BMI T1-T2	-.469	.228	.0398

v Deliberate Self-Harm

No predictors of deliberate self-harm were identified. Again, this should be treated with caution as only four adolescents showed deliberate self-harm during the one-year of treatment.

Chapter Six

METHODOLOGICAL ISSUES

Sample Ascertainment Bias

It is well known that the majority of treatment studies are carried out in centres that have characteristics that render them different to the services from which most treatments will be provided. Research centres often evaluate single treatments (rather than combinations of treatments) that are offered by more skilled practitioners who have more time for the patients in the trials, compared with their colleagues in service settings (Chorpita et al, 1998). There may also be differences regarding the patients entered into trials and those seen in routine practice. Treatment trials usually require homogeneous groups, typically of patients who reach all the criteria for the relevant disorder, and sometimes with the exclusion of those with comorbidity. Research settings often serve large populations, and sometimes act as national referral centres, so there is also the risk that more atypical cases will be seen. These very important factors may limit the extent to which the findings from treatment studies can be generalised to other settings, a potentially serious problem.

This treatment study was carried out in a well-known psychiatric hospital that acted as a national and local referral centre. The eating disorder service received referrals from general practitioners and a small number of self-referrals, and many from other psychiatrists who requested second opinions. The increasing experience by the leaders of the research group and communication of what had been learnt from earlier studies may have had an influence on the kind of cases that were referred to the service. Specifically, as time progressed, more patients with a longer history of anorexia nervosa and more complex problems including more difficult family relationships may have been referred.

In order to test out this hypothesis a comparison was made of some key characteristics of this study sample with the pilot study for which adolescents were recruited from December 1986 to February 1988 (Le Grange et al, 1992a,b). Table 6.1 illustrates the key characteristics.

Table 6.1

**Comparison of Pilot and Main Study:
Characteristics and Outcome of Adolescents**

Variable	Pilot study N=18	Main Study N=40	Statistics Chi square
Age mean (SD)	15.3 (1.8)	15.5 (1.6)	
Illness duration mean (SD)	13.7 (7.6)	12.9 (9.4)	
Initial ABW % (SD)	77.9 (7.6)	74.3 (9.8)	
Outcome by category			
Good/ intermediate	12 (67%)	25 (63%)	
Poor	6 (33%)	13 (37%)	.948
Treatment dropouts	0 (0%)	11 (27%)	.013
Admissions during treatment	0 (0%)	4 (10%)	.164

Unfortunately the complete data set from the pilot study was not available so the data is obtained from the publications (Le Grange et al, 1992a,b). Statistical tests can be performed where categorical differences are sought. This shows that the adolescents in the pilot and main studies were similar with regards to age and illness duration. They had similar outcomes after six months of treatment (table 6.1 reports the outcomes at T3 for the main study). Families in the main study had significantly higher treatment dropout.

Table 6.2

**Comparison of Pilot and Main Study:
Parental Critical Comments at the Initial Assessment T1**

Variable	Pilot study N=34	Main Study N=79	Statistics Chi square
Parental Critical Comments at T1			
0 critical comments	17 (50%)	23 (29%)	
>0 critical comments	17 (50%)	56 (71%)	.033

The parents of the adolescents in the main study were significantly less likely than those in the pilot study to make no critical comments during the initial family assessment interview (both studies used the semi-structured clinical family interview, (Kinston & Loader, 1984) as the basis for rating expressed emotion). Higher levels of critical comments suggest more family discord and stress.

This data lends support to the idea that during the recruitment period for these studies (1986-1991) the adolescents referred to the eating disorder service increasingly had more difficulties in treatment and their families were more distressed. The adolescents in the study reported here (the main study) might also have had more treatment difficulties than those who would usually be seen in non-specialist settings.

Measures and Instruments

1. *Measurement of Weight*

The measurement of weight and the identification of healthy weight is more difficult for children and adolescents than it is for adults. While measures of weight are immediately accessible and have some clinical utility, they are obviously limited because the significance of a given weight change varies according to the child's size and pubertal status. Prepubertal children have less body fat than post-pubertal adolescents and are more vulnerable to weight loss. It was customary to calculate weight for height corrected for age based on previously established national standards (Tanner & Whitehouse, 1986). This would give the average body weight, data that is provided in many of the results. However these standards have now been replaced by more recent normative data for the population of the U.K. (Cole, 1994). In recent years it has been argued that estimation of body fat can be more reliably calculated for children using the body mass index (BMI). BMI changes according to age and increases throughout adolescence. In view of this it has been suggested that the BMI should be expressed as a standard deviation (SD) score, which can be converted to a centile using normal distribution tables (Cole et al, 1995). This method has recently received endorsement from investigators in the field of eating disorders (Oehlschlagel-Akiyoshi et al, 1999). Nevertheless, others have cautioned that standards using BMI still have limitations for very fat and very thin children (Mulligan & Voss, 1999). This occurs because BMI varies according to size and height, and for those not of average height, there is a variable relation between height, weight and BMI throughout childhood (Mulligan & Voss, 1999). This is of course particularly relevant for the subjects of this study.

In this study weight has been reported in three ways (weight, ABW, and BMI), which are accessible and allow comparison with other studies. The changes in these measures during the year of treatment have been very substantial. It is

highly unlikely that different results would have been obtained by adding a fourth measure based on the exact SD of the BMI, and this way of estimating deviance itself has some limitations for this group of subjects.

2. *Interview Based Measures: The Morgan-Russell Scales*

The Morgan-Russell Scales were originally developed for the assessment of adults with anorexia nervosa (Morgan & Russell, 1975). Since then they have become established as an important instrument in research into eating disorders. However difficulties arise because they are not based on operationalised definitions, nor were they developed to be used for adolescents specifically.

One relevant issue is the assessment of psychosexual attitudes and difficulty in scoring primary amenorrhoea for the younger adolescents. There are a number of relevant issues regarding the possible limitations of this instrument. Firstly, that a small number of the subjects in this study were pre-pubertal (3) and in addition 4 had primary amenorrhoea. For the former group the score were calculated by omitted the measures regarding presence of amenorrhoea. Given the young age of this group, the questions regarding psychosexual adjustment (MRD subscale) were omitted. For the adolescents with primary amenorrhoea, it was occasionally hard to assess whether the failure to achieve menstruation was for constitutional reasons or due to the disorder. When there was doubt the menstrual status was marked as pre-pubertal.

The second issue concerns the inter-rater reliability of the scales. Some critics have suggested that the scales have poor inter-rater reliability (Freeman et al, 1996). These investigators compared the scores from assessments carried out by two research investigators with clinicians, the number of which is unclear, for 66 patients with eating disorders. Using the weighted kappa statistic poor inter-rater reliability was found between the researcher-clinician pairs. However that study can be criticised because the clinicians were heterogeneous. A more recent study found high intraclass correlation coefficient between raters (0.79) for the Morgan-Russell total score (Lund et al, 1999).

Despite these controversies, it should be remembered that all the interviews and scoring of the Morgan-Russell scales were carried out by the investigator, a major strength of the study. There is likely to be high reliability of the scores reported here because of this. Interviews were carried out with all adolescents and at least

one parent. Symptoms were identified if disclosed by either adolescent or the parent. Some adolescents disclosed much more than their parents about their bulimic behaviours, eating attitudes or depressive symptoms. By contrast there were some parents who described more fully their daughters dieting and abnormal eating and related attitudes. Given the range of symptoms and behaviours assessed information was integrated from adolescents and parents, an approach advocated by recent studies into parent adolescent correspondence of reporting (Cantwell et al, 1997).

3. *Assessment of Depression*

The previous discussion regarding the importance of the multi-informant approach to diagnosis is as relevant for depression as it is for the assessment of eating abnormalities (Cantwell et al, 1997). However a number of specific issues arise regarding the diagnostic criteria used for the identification of depression.

The Morgan Russell scales have a subscale for mental state abnormalities, which refers to the level of severity of abnormalities that may be due to depression, obsessive-compulsive disorder or other disorders. Social impairment is built into this, as significant impairment of social function is required for a score of 4 or 0. Since this is a composite score the depression scale had been added to the Morgan Russell scales, which included rating for depression that reached the criteria described by Feighner et al (1972). The Feighner criteria were very influential and became the foundation for DSM IIIR. A number of issues arise regarding their use in this study population.

Firstly the Feighner criteria for depression were developed from adult populations. Later work has indicated that the adolescents do not require different criteria from adults for the diagnosis of depression, and this is recognised by the DSM IV (American Psychiatric Association, 1994) and ICD 10 (World Health Organisation, 1992) classificatory system. Nevertheless semi-structured operationalised interview based systems such as the Schedule for Affective Disorders for Children (K-SADS) (Chambers et al, 1985) would now be regarded as preferable. Such interviews have established reliability and validity for this age group.

Secondly, a problem arises in the diagnosis of depression comorbid with anorexia nervosa because of some overlap of symptoms between the two disorders. Thus for the Feighner criteria (Feighner et al, 1972), as for other diagnostic systems,

loss of appetite and weight and reduced sleep are regarded as depressive symptoms. The same symptoms may also occur in anorexia nervosa. In this study the Feighner criteria were used, and depression identified in the presence of sadness and four symptoms of depression, as the reduced weight and appetite required were always present. This would yield the five symptoms required for a definite diagnosis required by the Feighner criteria.

4. *Questionnaires*

The main limitations of the questionnaires were that they have been developed for use with extremely homogenous groups. Specifically, older adolescent or young adult females who have English as their first language and are from European or American cultures. The sample in this study was somewhat broader by including one male adolescent, and having younger adolescents (the youngest was 11 years), and some who were premenarchal. For these patients, approximately five in number, the questionnaires used to assess eating attitudes the EAT and EDI may have not have been ideal. The subgroup may have scored some of the questions idiosyncratically, perhaps because of difficulty in understanding some of them or because of their apparent irrelevance. It should be born in mind that these questionnaires might be culturally limited, and even across socio-economic groups there are differences in how individuals score them (Eisler & Szmulker, 1985). However the other questionnaires such as the MFQ used to assess depression, and the RSE for the assessment of self-esteem are very suitable for use in this population.

In considering the significance of these limitations it should be remembered that the main goal of the study was examination of changes over time and predictors of change, using initial variables. Since much of the data analysis was carried out to identify intra-individual change, the limitations of the questionnaires may be less important than when used to compare groups which may have different numbers of younger adolescents. However a more substantial point is the number of very similar findings using either questionnaire scores or interview-based measures, regarding the overall patterns of change and predictive factors. Specifically, the adolescents attitudes and behaviour, and depression, improved according to both interview and questionnaire measures of change. Furthermore, the rate of change was similar with both kinds of measures.

5 Assessment of Family Interaction – Expressed Emotion

A number of issues arise in relation to the assessment of expressed emotion. Firstly, this study assessed EE using the standardised clinical family interview (SCFI, Kinston & Loader, 1984). The content of this interview and the correlation of scores with the traditional method of rating EE, the Camberwell Family Interview (CFI) carried out with parents alone, is described in Hodes et al (1999), reproduced in appendix 1. It can be seen that the family interview explores many aspects of family life and is not problem focussed, and so may elicit less emotional responses. This may be one reason why the family interview yielded less critical comments, warmth and positive remarks. Fathers made significantly fewer critical comments about the eating in the family interview than they did in the CFI, whereas this did not occur for the mothers (Hodes et al, 1999, see appendix 1). The lower level of expressed emotion elicited with the SCFI may be relevant in explaining some of the results reported in chapter five, and which will be discussed more in chapter seven. This is particularly relevant for the use of EE as a predictor of outcome. By contrast, the overall direction of change during the course of the one year of treatment is likely to be very similar even if the CFI was used throughout the study period.

The inter-rater reliability of EE ratings was assessed (Hodes et al, 1999, appendix 1). This was assessed using video-recordings of family interviews carried out in the first year of the investigation, and all were initial (T1) family interviews. The inter-rater agreement between the investigator and another researcher trained in the rating of EE was good for all dimensions of EE except emotional overinvolvement. When parents were considered together, intra-class correlation coefficients were: for critical comments, .76, hostility .71, emotional overinvolvement .30, warmth .67, positive remarks .80. It is unclear why the intra-class correlation coefficient for emotional overinvolvement was so low. One reason is that in the family interview inadequate speech is made by parents to score this reliably, especially as it is a composite global score recognised by melodramatic speech and intense affective expression in the interview, overprotectiveness and self-sacrificing behaviour.

The final issue is the possibility that the rating of EE using the SCFI drifted over time. The reliability test had not been carried out on randomly chosen recordings.

The more intensive study of EE was carried out using the interviews obtained in the first year, when the SCFI and CFI were carried out with the same families. However the overall direction of change, for example the reduced levels of parental critical comments to the adolescents, were highly consistent with the improvement in the Morgan Russell psychosocial outcome subscale, which included global measures of family functioning. The investigator carried out the great majority of the EE ratings, and this may have contributed to less variability in ratings than if many individuals had been involved in rating the recordings.

Problems with Assessments

During the course of the one year of treatment, adolescents and their families were assessed four times. The initial assessment was the longest because it had to be comprehensive and assess all areas of functioning. However the subsequent assessments, especially with regard to the individual psychiatric assessment could be briefer. This was importantly related to assessment of weight and menstrual status, which would not be affected by repeated measurement. By contrast, repetition of the standardised clinical family interview (SCFI) resulted in briefer interviews. Families would respond to the opening questions that 'things were the same as last time', and this would require the investigator to prompt, and ask the families to say what this was. Despite this prompting family interviews did tend to get shorter as they were repeated, especially between the second and third interviews between which there was a three months gap, and the rate of change with regard to weight gain and eating started to reach a plateau. One consequence of shorter interviews is a reduced capacity to elicit emotion, and as a consequence reduced EE might be a function of repeated interviewing. While it is impossible to exclude this possibility for parental criticism, which was reduced over time, the finding that parental warmth to the spouse increased indicates that this effect was certainly not pervasive and may be small. Considering other studies, it is clear that the length of the interview is not of over-riding importance in assessing EE. For this reason, even five minutes of parental speech (the five minute speech sample, FMSS) does show significant association with the CFI rating (Van Furth et al, 1993).

A further issue is that repetition of measures will be associated with 'regression to mean'. Thus initially deviant scores will tend to fall and approximate to the scores of the mean of the group from which the sample was drawn. This is in part a

function of measurement and partly a function of biological systems. The reduction in most scores over time might suggest that the phenomenon is occurring here. However the incontrovertible increase in weight for the group as a whole suggests this cannot play a major role. There is also evidence that certain measures such as parent to parent warmth actually increased during the year of treatment, and it is likely that this, in association with improved global rating of social relationships (Morgan Russell E socio-economic subscale) occurred because of real improvements in relationships. However for the questionnaire scores, the effect of repeated measurements and regression to the mean may be stronger. This effect may be amplified by the selective effect of non-return of questionnaires. Specifically adolescents who did not return their questionnaires might well have had more difficulties in various aspects of their lives (see below).

Investigator Bias

It is well known that investigator bias may introduce measurement error. This occurs because consciously or unconsciously the investigator is seeking data to support a particular hypothesis or perspective. Regarding this study it could be argued that the investigator had a vested interest in the efficacy of family intervention and this may have contributed to recording bias. There are a number of factors that would militate against this:

1. Initial measures obtained at the first assessment, including the rating of expressed emotion, were carried out before treatment allocation and there could be evidence of treatment progress.
2. All therapy and treatment decisions were carried out by other people and independently of the investigator. Thus data obtained at each assessment could not be influenced by future treatment or management decisions e.g. treatment dropout, the need for hospital admission.
3. The most important measure, weight, should be the one least influenced by observer bias.
4. Data was obtained from multiple informants, with striking convergence of findings within each functional domain, e.g. eating attitudes, mood, and family relationships.

Nevertheless, it was not possible for 'blindness' to be maintained because the investigator knew what treatments the families received and the adolescent's progress was evident from all assessments. Complete blindness would be impossible to achieve even if a second investigator were to be involved because the adolescents' progress would be indicated in many parts of the assessments including the family interview carried out for rating of expressed emotion.

Treatment Fidelity

Since this research report is primarily about the effect of family treatment on adolescent anorexia nervosa it is important to consider the extent to which this was the treatment actually delivered.

The family treatments provided have been well described and developed by the senior figures in the research group (Russell et al, 1987; Dare et al, 1990, Le Grange et al, 1992a,b). The treatments were supervised throughout the year by the same two supervisors, each responsible for one of the two forms of family treatment. There were three therapists who attended weekly supervision with the supervisors, and one of the goals of these sessions was to maintain conformity of treatments. This would have been highly effective for ensuring that therapists would not provide specific types of alternative therapy, such as an explicitly psychodynamic approach involving transference work, or a course of cognitive-behavioural therapy with or without the parents present. Nevertheless, it was accepted that psychoeducation would be included in discussions at the beginning of therapy and inevitably there would be some overlap between this and elements of a more developed cognitive behavioural approach. There may also have been overlap with interpersonal psychotherapy especially for the separated family therapy (Fairburn, 1993). However the extent to which there was treatment fidelity was not formally tested. The family treatments were not manualised and no checks regarding the treatments delivered were carried out using recordings of sessions.

One further consideration is the extent to which adolescents and families received additional treatments. One adolescent was having individual psychodynamic psychotherapy at entry into treatment and continued with this throughout the year. As has been described four adolescents required admission because of problems

related to the eating disorder. Regarding those who dropped out of the treatment programme some were known to receive treatments elsewhere. One adolescent female sought counselling. Another dropout was the only male adolescent who was later admitted to a private psychiatric unit because of his anorexia nervosa and comorbid obsessive compulsive disorder. None of the adolescents received psychotropic medication during the year of treatment. Thus, for the majority the family treatment was the only therapy that they received.

Sample Attrition and Non-Participation in Research

The effect of sample attrition and non-participation in the research assessments has been discussed in relation to expressed emotion ratings. Data collection was only complete for weight at the four assessment points. The pattern of data loss is summarised in table 6.3.

Table 6.3

Data loss at different assessment points				
Variable	Level of participation in assessments at different points			
	T1	T2	T3	T4
Weight	40	39	39	40
Morgan Russell scores	40	39	38	38
Questionnaires	40	34	32	32
Expressed emotion				
Mothers	40	37	32	30
Fathers	39	36	29	27

Key: Questionnaires includes adolescent self-report measures
EAT, EDI, MFQ, MOCI, RSE.

As can be seen there was complete data collection regarding weight related outcomes. There was minimal attrition in relation to the interview base Morgan Russell scales. In one case, because the patient and his family refused to be interviewed directly, information came from interviews with the patient’s psychiatrists, who were well informed regarding his progress. However regarding questionnaire data and family interview data there was significant attrition.

As has been shown in relation to expressed emotion, those who dropped out of treatment were more likely to refuse participation in the family interview for expressed emotion. It has been shown that those who drop out became increasingly different to those who stayed in treatment. Therefore it was important to investigate how much the non-participants in the final assessment were different to participants. Although there was no significant association between participation in the final family interview and the adolescents' weight as measured by BMI, or categorical outcome, there were some changes in other symptoms. Table 6.4 illustrates this. It can be seen that participation in the final assessment was associated with much higher interview based scores regarding depression and obsessionality, and a slightly higher score with regard to vomiting.

Table 6.4

Comparison of outcome of adolescent participants and non-participants in final assessment T4			
	Participants N=30 mean (SD)	Non-participants N=10 mean (SD)	Statistics t test p value.
BMI mean (SD)	18.7 (2.7)	17.7 (2.5)	.280
Morgan Russell AOS	8.6 (2.3)	7.0 (2.7) *	.110
MRF bulimia	11.5 (2.2)	11.1 (2.0)	1.000
MRF vomiting	10.6 (3.5)	12.0 (.0)	.037
MRF laxative	11.7 (1.6)	10.8 (2.5)	.314
Depression	9.1 (4.4)	4.0 (4.6)	.004
Obsessionality	10.9 (2.4)	8.0 (3.7)	.007
Tension	10.2 (2.5)	6.2 (5.3) **	.060

*n=8 **n=9

The implications are particularly relevant for both the adolescents' self report questionnaire scores and also the expressed emotion scores. Firstly, the self-report questionnaire scores are more likely to have been completed by those with less depression, less obsessionality and so may under-report difficulties in these, and perhaps other areas from the second assessment (T2) onwards, when significant attrition began. Secondly, the demonstrated predictive value of paternal critical comments and adolescents final depression suggests that the final EE measures may show more reduction in critical comments than would have occurred if all families had participated. In addition, the increase in warmth between parents may be inflated because of non-participation, as the non-participants had more impaired adolescents, and probably more distressed

families and parents who showed less increase in warmth to each other compared with the participants.

Statistical Issues

There are three important statistical issues regarding this study. The first and most important is the study sample size. The study is relatively small, and has a large number of variables. However the highly significant changes in the main outcome measures such as changes in weight and Morgan Russell scores indicate that the sample size was adequate for assessing areas of change. Sample size was small for investigation of changes and outcome of subgroups, such as the comparison of depressed and non-depressed adolescents, and treatment dropouts and completers. The cell sizes were especially small regarding the investigation of the four adolescents who were admitted to hospital and the four who carried out deliberate self-harm. In these circumstances there is particular risk of Type II errors, which occur when a non-significant result is obtained, and the null hypothesis is not rejected. This can be thought of as a false negative finding arising because the study is under-powered.

The second statistical issue concerns the effect of multiple testing. This may give rise to Type I errors, when the null hypothesis is incorrectly rejected. This is particularly likely to occur when tests are carried out with the same variables. However in this study although many tests were carried out, a large number of variables were used. This greatly diminishes the problems that arise from multiple testing.

The third statistical issue that needs to be mentioned concerns the characteristics of the general linear models used in the SPSS package for the analysis of variance tests carried out here. When data is missing at one time point then the case is dropped from statistical analysis. The tests used here did not carry forward or extrapolate from existing data as can be achieved in complex statistical modelling (Everitt, 1998). In this context the earlier discussion regarding the effect of missing data and sample attrition is relevant.

Chapter Seven

DISCUSSION OF RESULTS

The Patient Population

As can be seen from table 5.1 the patients are largely females from higher socio-economic backgrounds, in mid-adolescence, having a mean age of 15.5 (SD 1.6) years. The patients would be regarded as having short histories of anorexia nervosa, given the mean illness duration of 12.9 (SD 9.4) months, maximum being 36 months. They had relatively low weight considering they were being entered into an outpatient treatment programme (mean weight 40.0 kg (SD 6.4), ABW 74.3% (SD 9.8), BMI 15.4 (2.0)). The adolescents were predominantly post-menarchal (with 29 of the 40 having secondary amenorrhoea). As has been described in chapter six, table 6.1, the weight, illness duration and age of the patients in this study were similar to those of the pilot study (Le Grange et al, 1992 a, b). Compared with the adolescent sub-group from the first Maudsley study (Russell et al, 1987), the patients had similar age and illness duration but higher weight at entry to the treatment reported in this study. This is understandable since that first study began intervention with hospital admission for weight restoration and so could include patients with very low weight (Russell et al, 1987).

Weight Gain

It can be seen that the adolescents in this study achieved very substantial weight gain, 8 kg, over the first six months of treatment but then reached a plateau with no further increase in weight. This represents .31 kg increase per week over the first 26 weeks. When expressed as weight for height corrected for age, this represents an increase of ABW from mean 74.3 (SD 9.8) to 87.4 (SD 11.7) after 26 weeks of treatment. This is a similar rate of weight gain to that of the pilot study involving 18 adolescents, who were treated over 32 weeks, whose weight increased from ABW of mean 77.9 (SD 7.6) to 94.1 (SD 12.8) (Le Grange, 1992b). However it is less than the increase for the 10 adolescents with short history anorexia nervosa from the first Maudsley study who during a year which began with inpatient weight restoration achieved an increase of ABW from mean 67.3 (SD 7.0) to 92.8 (SD 8.4) (Russell et al, 1987). This does raise the possibility that initial hospital admission leads to a

better, sustained weight trajectory. However in view of the small sample size these findings need to be taken with caution. There may also be sampling differences, such as the possibility discussed before that the adolescent group in the initial study who were admitted had less distressed families. It is difficult to make direct comparison with the Detroit study, which did not express weight in this way, but as BMI (Robin et al, 1999, see below).

When expressed as BMI, the increase in this study from an initial mean 15.4 (SD 2.0) to 18.5 (SD 2.4) represents a gain of 3.1. This clearly indicates a move for many patients from the abnormal range specified in the ICD 10 criteria for anorexia nervosa to the normal weight range. This is slightly less than the increase for the 19 adolescents who received behavioural family systems therapy in the Detroit study (Robin et al, 1999) (the treatment comparable with the family intervention given in this study). In this group of adolescents' BMI increased from a mean of 15.2 (SD 1.8) to 19.9 (SD 1.9), an increase of 4.7. This greater increase may be explained by the fact that the Detroit study had slightly younger patients, with the behavioural family systems therapy group having a mean age of 14.9 years. Secondly, all 37 of the patients in the Detroit study had illness duration of less than 12 months. Thirdly, patients were hospitalised for a refeeding programme at the beginning of the study if their weight was below 75% of ideal weight. Patients were discharged when they reached 80% of the target weight, and were gaining weight on a regular basis. Finally outpatient therapy was provided over a longer period of time, as therapists could offer 12-18 months of therapy to optimise outcome (Robin et al, 1999).

In the study reported here no weight was gained in the second half of the treatment period for the group as a whole. This is surprising, as it has been shown that following one year of an effective treatment, weight gain continues and can be recognised at one year (Gowers et al, 1994) two year (North et al, 1997) five year (Eisler et al, 1997) and ten – fifteen year follow-up (Strober et al, 1997). What this means is that achieving a healthy trajectory in treatment is likely to be maintained, but the rate of change in weight may diminish after the first few months of initial rapid weight gain.

Despite the initial rapid increase in weight and BMI, there is also a trend for low weight to show continuity. Thus, at the start of treatment BMI was strongly associated with illness duration, with lower BMI in those who had been ill longer

($p=.001$). Regarding the persistence of low weight, the strongest predictor of final BMI was initial BMI, which accounted for 19% of the outcome variance.

Regarding other predictors of weight outcome as measured by BMI, age was also found to be important. Family treatments are more effective for the younger adolescents. Illness duration and past treatments were not retained in the multiple regression model for prediction of final BMI. This very interesting finding is consistent with the finding from the first Maudsley family therapy study for anorexia nervosa regarding the differential age effect (Russell et al, 1987). Specifically the finding that family therapy did not produce effective relapse prevention for adults was interpreted in terms of life cycle transition (Dare et al, 1990). For the older patients in the first study and also in this one, it is easier for the parents to supervise and influence their daughters' eating when they are in earlier than late adolescence. This almost certainly reflects the lower level of autonomy, real or expected, of the younger adolescents.

When background variables known to be correlated with outcome and treatment dropout (but not EE) were entered into the multiple regression model, treatment dropout added significantly to the outcome variance (explaining 8% of the outcome variance). This is consistent with the idea that the capacity to participate in treatment, and use effective therapy will improve the adolescents' outcome. Those who dropped out of therapy had poorer weight gain and Morgan Russell general outcome.

Regarding parental expressed emotion as a predictor of final BMI, it was very surprising that parental critical comments to the patients did not predict weight gain (see tables 5.14 and 5.15). This suggests that parental criticism arises as a response to adolescents' low weight and other characteristics, and may reflect parental distress and frustration at their daughters' failure to eat adequately despite repeated and persistent urging to do so. Consistent with this is the finding that the levels of parental comments, when dichotomised into high and low using different thresholds, were not associated with final weight. This is surprising given the results of the pilot study that better categorical outcome was associated with more reduction in parental critical comments (Le Grange et al, 1992a). Also van Furth et al (1996) found that maternal critical comments predicted the outcome of adolescents' with eating disorders using the Morgan Russell average outcome scales. This is discussed below.

This study found that maternal warmth to the father displaced treatment dropout from the multiple regression model, and was also a predictor of final BMI, explaining 9% of the outcome variance. This had not been expected. Previous studies of adolescent eating disorders had not included measures of the quality of the relationship between the parents although some had global measures of family function (North et al, 1997). However initial warmth from mother to father presumably reflects the overall quality of the parental relationship that is important for achieving the initial therapeutic task of encouraging the adolescents to eat more. Given the protests and sometimes difficult behaviour of the adolescents, it is clear why an effective parental relationship should be needed to achieve good weight gain. This raises the important possibility that other simpler measures of the quality of the parental relationship e.g. self-report questionnaires could be used to predict treatment progress.

Regarding the finding that maternal warmth to father displaced treatment dropout from the multiple regression model, this suggests that dropout is a correlate of family processes that are better reflected in the measure of maternal warmth to father. It may well be that families that lack adequate cohesion are unable to persist in treatment and the adolescents have worse outcome as reflected in less weight gain. This would be consistent with the findings from an earlier study investigating the association between treatment dropout in older adolescents and young adults with eating disorders. High parental critical comments to the sufferers were associated with dropout from family treatment (Szmukler et al, 1985).

However the finding that maternal warmth to the father was a predictor of final BMI should be treated with caution in view of the way that it was measured. It was rated from the whole family interview and only a relatively small amount of maternal speech would have been used to score this measure. It should also be borne in mind that rating parental expressed emotion from the parents to adolescents showed moderate but variable correlation with the traditional way of measuring expressed emotion using the Camberwell Family Interview (Hodes et al, 1999).

Outcome by Categories

In this treatment study 15 (37%) adolescents achieved good outcome, 10 (25%) intermediate outcome and 15 (37%) poor outcome. This still means that a significant

number have an eating disorder (14 still reached the criteria for anorexia nervosa, one had developed bulimia nervosa) after one year of treatment.

This is similar to the outcome achieved in the pilot study with 18 patients as described in chapter 6 (Le Grange et al, 1992a,b) . The numbers achieving good or intermediate outcome in the pilot study and this study are 38 out of 58 (65%), which is a lower proportion than in the first Maudsley study when looking at the adolescent group (Russell et al, 1987). In that first study 9 out of 10 (90%) of the adolescents who received family therapy had good or intermediate outcome. As with the discussion above regarding weight gain, possible explanations, are that initial admission is helpful, or that the adolescents and families had fewer difficulties, or that such small numbers in the first study make it impossible to draw any conclusions.

Another British study that investigated outcome of 75 adolescents with anorexia nervosa (mean age at presentation 15 years), found that 2-7 years later 45% had good, 23% intermediate and 15% poor outcome (Gowers et al, 2000). The sample characteristics were very similar to this study, suggesting that the slightly improved outcome was a result of the longer follow-up period.

Other studies of adolescent treatment and outcome have been discussed in chapter three. Outcome has been defined in various ways. The trichotomy good outcome to refer to recovery from defining symptoms of anorexia nervosa, intermediate or fair outcome to refer to improvement with some residual symptoms, and poor outcome is synonymous with long-term chronicity has been used by the leading reviewer in the field (Steinhausen, 1997). The outcome from the review was that 52% achieved good outcome, 29% fair outcome, and 19% had poor outcome. Again, this higher rate of full recovery would be explained by the fact that in the review many subjects had been followed up at more than one year, there was significant loss to follow-up, and perhaps sampling differences with variables levels of disturbance at initial assessment (Steinhausen, 1997).

Unique amongst outcome studies is the longitudinal epidemiological study carried out in Goteberg investigating 51 adolescents with anorexia nervosa and with follow up of the complete sample after six years (Gillberg et al, 1994). It was found that at follow-up 41% had good outcome, and 35% intermediate and 24% poor outcome. These outcomes are only slightly better than the outcome reported from this

treatment study, suggesting that the treatment helps return individuals more rapidly to a healthier trajectory.

General Outcome According to the Morgan Russell Outcome Assessment Scales

As has been mentioned in chapter five the adolescents in this study made very significant gains in all the Morgan Russell subscales after one year of treatment, reflected in an increase of the MRAOS from mean (SD) 5.5 (1.7) initially to 8.3 (2.5) at the time of the final assessment. Nevertheless the final MRAOS and all subscales were less than 10, except MRC mental state which reached 10.2. Thus a high proportion of the adolescents would have had some symptoms of an eating disorder or disturbance in social functioning.

This change is not quite as large as that of the adolescent group who received family therapy in the first Maudsley study (Russell et al, 1987), whose MRAOS increased from 5.5 (1.3) to 9.7 (2.0). The size of the improvement in these Maudsley studies appears better than that of 35 adolescents with anorexia nervosa seen one year after assessment by North and colleagues (North et al, 1997). For that cohort the MRAOS increased from an initial median of 4.9 to median 5.8 one year and 8.4 two years later. It is rather hard to interpret this data as it was unclear what treatment was offered and taken up by the adolescents and families involved.

The pattern of change was striking with initial rapid improvement during the first three months of treatment in three Morgan Russell subscales: A nutritional, C mental state and E socio-economic subscale. This is consistent with the findings described above regarding the substantial improvement in weight within the first three months. Improved mood over this time would be associated with and partly a result of, increased weight, as well as the reduction in parental critical comments and other social changes. The rate of change in the MR A nutritional subscale clearly diminishes, unlike the changes in the MR E socio-economic subscale, reflecting the continuation of improvements in family relationships and social adjustment between 6-12 months. This suggests that rapid weight gain can be achieved by increasing parental control and supervision of eating, but improvement in mood and social functioning occurs because of different mechanisms. Firstly improved nutrition gradually leads to improved brain function and altered mental state especially reduction of depression and reduced food preoccupation. Secondly these changes will be associated with gradual return to normal social function such as increased

involvement in school and contact with the peer group. Thirdly there will be improved family relationships, and this is reflected in the reduced parental criticism to the adolescent and gradually increased warmth between parents.

The improvement in MR B menstrual subscale occurs after more than three months of treatment and after initial weight gain. This is a function of the time required for the neuroendocrine mechanisms concerned with menstrual function to return to normal.

Regarding correlates of general outcome, final MRAOS was negatively correlated with age and illness duration (table 5.3), meaning that the better outcome occurred in the adolescents who were younger and had shorter illness duration. This is consistent with majority but not all other studies (Steinhausen, 1997, 1999). However in the multiple regression model initial BMI and age are found to be important predictors of final MRAOS, but illness duration is not retained. This suggests that illness duration is relevant for understanding MRAOS in so far as it is a correlate of other factors such as age and initial BMI.

It is extremely interesting that the MR E socio-economic subscale is a strong predictor of MRAOS, explaining 19.5% of the variance. This means that initial social functioning is a strong predictor of recovery from the anorexia nervosa, improved mood and future social functioning. This has not been shown so clearly in previous studies of adolescent anorexia nervosa (Steinhausen, 1997, 1999). The MR E socio-economic subscale itself is a composite of: the quality of family relationships, independence from the family, amount of time spent at work or school, and the quality of relationships outside the family.

A convincing explanation as to why the MR E socio-economic subscale is a strong predictor of MRAOS comes from the developmental view of anorexia nervosa. According to this perspective the disorder is regarded as a disturbance of maturation brought associated with the demands of pubertal development (Crisp 1980). Consistent with this view is the finding that prior to the onset of anorexia nervosa a high proportion of adolescents were exposed to 'high concern parenting' arising from obstetric and perinatal problems (Shoebridge & Gowers, 2000). Thus, premorbid difficulties in establishing autonomy and age-appropriate reciprocal relationships within the family and beyond, reflected in the MR E socio-economic subscale predict overall outcome. Recovery requires the capacity to overcome these maturity fears and develop more healthy relationships. Social anxieties may further impair

development. For example the data from Goteberg showed at six-year follow-up those who had anorexia nervosa were more likely compared with healthy controls to have difficulties in achieving independence and developing social activities outside of the family (Gillberg et al, 1994). Poor empathy is also associated with poorer prognosis from anorexia nervosa (Gillberg et al, 1994). Long-term follow up studies have shown that a premorbid history of poor social relating is associated with chronic outcome for anorexia nervosa (Strober et al, 1997).

These studies address aspects of personality and converge in suggesting that this may be an important construct in predicting outcome for adolescent anorexia nervosa. Personality has been neglected in research with this age group, most studies having been carried out with adults (Wonderlich, 1995).

Regarding the other predictors of final MRAOS, it is to be expected that age and initial BMI would be significant. As has been discussed, age and initial weight predict final BMI. Weight and aspects of functioning strongly associated with weight such as menstrual functioning are reflected in the MRAOS. The predictive value of age for the final outcome is also consistent with the previously discussed life cycle model of change. Specifically, it is easier for the parents of younger adolescents with anorexia nervosa to supervise their daughters eating effectively, as if the family is at an earlier stage of functioning, and as they gain weight, and control can be handed back and the parents then withdraw. This process is associated with more harmonious intra-familial relationships and better social adjustment for the younger adolescent, which is also reflected in the MRAOS.

The finding that treatment dropout adds significantly to the final MRAOS is consistent with the evidence that treatment is effective in achieving improved outcome. As has been shown, in families that drop out of treatment the adolescents do not achieve the same gains as those that persist in treatment. However the value of the multiple regression model is in showing that treatment dropout predicts outcome, rather than poor outcome leading to treatment dropout. Nevertheless, treatment persistence only explained 5.8% of the variance in outcome, with a p value of .032, so these findings are less significant than those regarding the MR E socio-economic subscale, age and initial BMI. In addition there may also be another unidentified factor that explains the difference between families that dropout of treatment and those that persist, and this could also account for the difference in outcome between the two groups.

Finally, it is striking that no dimension of EE was a predictor of general outcome measured by MRAOS. The stepwise multiple regression method used investigates whether EE predicts any of the outcome variance for MRAOS above that predicted by variables such as age, initial BMI and MRE socio-economic scale. The absence of such a finding is surprising, given the evidence from previous studies that EE is associated with treatment dropout in eating disorders (Szmukler et al, 1985), which is itself associated with outcome. The pilot study had shown that greater reduction in parental critical comments to the adolescent with anorexia nervosa was associated with better outcome (le Grange et al, 1992, a, b). More striking was the study by van Furth et al (1996) which found that EE, specifically maternal critical comments to the adolescent, explained 28-34% of the outcome variance using the MRAOS. There are a number of possible explanations for these discrepancies. Firstly, the van Furth study measured EE with the Camberwell Family Interview and it is possible that this instrument gives ratings that have greater predictive validity than the whole family interview used here. Secondly, that study investigated older adolescents (mean age 17.3 (SD 2.4) years and included adolescents with bulimia nervosa. The third important reason is sample attrition, as the van Furth study had 33% sample loss at the one-year assessment point and 39% at two years.

Outcome of Depression

In this cohort of 40 adolescents there were initially 18 adolescents with Feighner depression, 20 with some depressive symptoms, and only two were euthymic. The cases of Feighner depression would have reached the criteria for major depression. Despite the limitations in the assessment of depression discussed in chapter six, there are a number of reasons for believing the findings here are adequately robust. Firstly there was high correlation between the initial MFQ scores and MR depression score, and consistency of findings between these two instruments. Secondly the levels of depression, and the changes, are similar to the findings from other studies of adolescent anorexia nervosa that have used standardised measures (e.g. North et al, 1997; Herpetz-Dahlmann & Remschmidt (1993b). For example in the study by Herpetz-Dahlmann & Remschmidt (1993b) 53% suffered from depression.

The data show striking improvement in depression during the course of treatment, so that by the end of one year only 8 (20%) had Feighner depression and 11 (27%) depressive symptoms. This reduction is probably consistent with findings from other studies, which have different methodologies such as follow-up at different time

points. For example, the study by Herpetz-Dahlmann & Remschmidt (1993b) assessed the adolescents 3 years later and found that 21% had depression.

It is striking in this study that the level of final T4 depression was not associated with final weight (see table 5.5). Regarding other eating disorder features, it is unclear why initial bulimia was found to be associated with better final mood. It is striking that initial illness variables such as illness duration, lowest past weight and initial weight were not associated with final depression.

There was an association between final MRAOS and depression, which would occur because the MRAOS includes a measure of mental state. In addition those with more depression at T4 had more obsessionality and tension at that time. Despite the changes in depression, there was also significant continuity, demonstrated by the fact that initial MFQ correlated with MFQ at T4. Furthermore, there was association between the initial MFQ and initial MR depression score and final MR depression score (see table 5.6).

The association between higher initial MR E socio-economic subscale score and less final depression, is consistent with the finding that the MR E score predicted final MRAOS, which includes a measure of mental state abnormalities. With regard to prediction, the initial MR E socio-economic subscale score explains 13.7% of the variance of final MR depression score and 15.5% of the final MFQ score. It is striking that the past social adjustment predicts final mood. This may occur for a number of reasons. Firstly, the adolescents with better social adjustment may have briefer forms of depression, with less past history of low mood. Secondly, the MR E subscale will reflect better family relationships, which will be associated with better outcome for mood. This is consistent with the findings regarding the outcome of child and adolescent depression generally, for which it has been shown that better family relationships, including less critical parents, are factors associated with better outcome (Asarnow et al, 1993). Finally, better initial social adjustment may result in less final depression because the recovering adolescent is more able to continue to develop relationships and has less feelings of sadness and despair regarding possible social isolation and relationship difficulties.

Consistent with these suggestions is the finding that paternal critical comments predict final MR depression score. It is surprising that maternal critical comments also are not predictors of depression. It had been shown that initial maternal critical

comments were associated with higher final MR depression. However the exclusion of this factor from the regression equation is consistent with the finding that there is no correlation between maternal and paternal critical comments (Hodes et al, 1999). The retention of paternal critical comments in the regression equation provides unusual data regarding the role of fathers in the course of the disorder.

The importance of improved family relationships and recovery from depression is also reflected in the fact that increased maternal warmth to patients explains some of the outcome variance. However this finding had not been predicted from investigation of factors associated with recovery from depression, and so should be treated with caution. No other studies of the course of depression in anorexia nervosa have investigated associations with family interaction.

Self Report Measures of Eating Attitudes and Self-Esteem

During the one year of treatment the adolescents showed very substantial reduction in abnormal eating attitudes and weight concern reflected in the Eating Attitudes Test, which fell from mean 50.0 (SD 25.3) to 19.7 (SD 16.1). Although the mean of the final scores were still in the abnormal range the large standard deviation reflects the large range of scores, and some of the scores were in fact in the normal range. There are similarly significant reductions in the Eating Disorders Inventory scores, which include measures of bulimia, and the psychological processes believed to be associated with eating disorders, which are interpersonal mistrust, interceptive awareness and ineffectiveness. Data concerning the changes in the EDI subscales are reported elsewhere (Dare et al, 2000). There are two striking features of these large reductions in the EAT and EDI. Firstly, there was dramatic improvement in eating attitudes although these were not the specific targets of treatment. This suggests that improvement was a result of weight gain, and perhaps reduction of depression. The second feature was that there were still abnormal eating attitudes at the time of the final assessment. While these attitudes might continue to improve spontaneously, it is also possible that for selected individuals further intervention would be beneficial. In other studies of adolescent anorexia nervosa there also large reductions in scores using the EAT and the EDI (Le Grange et al, 1992b; North & Gowers, 1999; Robin et al, 1999).

This study showed no significant improvement in the Rosenberg Self-esteem score. This is surprising considering the general improvement in health and reduced

depression. In the pilot study the adolescents who received conjoint family therapy achieved statistically significant increases in the RSE score, mean 24.3 (SD 5.6) to 28.3 (5.4) (Le Grange et al, 1992b). Self-esteem had not been investigated in the other adolescent treatment studies.

Outcome of Obsessive Compulsive Symptoms

It is striking that during the course and treatment that the interview measure of obsessionality and MOCI scores reduced significantly. Indeed the MOCI reduced significantly after three months of treatment. It is also striking that the final assessment the level of obsessionality was associated with the level of depression such that the more depressed adolescents had higher levels of obsessionality (table 5.5). However obsessive-compulsive symptoms do not predict outcome of depression using self-report or interview measures. Furthermore there was no association between obsessionality and treatment dropout, hospital admission and deliberate self-harm. Only one adolescent had definite obsessive-compulsive disorder and this persisted during the one year of treatment. However regarding the other adolescents, it is worth commenting that there was an overall reduction in obsessionality without this being specifically targeted during treatment during the course of weight gain and improvement in mood.

The interview measure of obsessionality has not been widely used so comparison with other studies is difficult. Regarding the MOCI, a number of other studies have been carried out with sufferers of anorexia nervosa using this instrument. The initial measures of obsessive-compulsive symptoms using the MOCI were similar to those found in some studies (Channon & De Silva, 1985; Fahy, 1991) but lower than the scores found in others (Beumont et al, 1995; Cassidy et al, 1999). They were lower than those of adolescents with recognised obsessive-compulsive disorder (Clark & Bolton, 1985). The reduction in MOCI scores demonstrated here was not found in a previous study of adults during the course of admission for weight restoration (Channon & De Silva, 1985).

Changes in Expressed Emotion

This study shows that there is substantial change in family relationships as measured by EE. Both mothers and fathers make fewer critical comments to their offspring during the course of the year. Interestingly there are no other significant

changes in the parental EE to their children. However, the relationship between the parents changes significantly, with fathers becoming less critical to the mothers. In addition, parents become significantly warmer to each other. There was surprisingly little differences in EE including parent critical comments to the adolescents according to outcome. Given the possible bias from sample attrition (discussed in chapter six) these results need to be interpreted cautiously, but there are a number of possible explanations for these changes.

1. Reduction of parental critical comments to adolescents

This may occur because the parents are supported through therapy in feeding the adolescents, whose weight on average starts to increase soon after treatment begins. The low weight and poor eating was typically the main focus of disagreement and conflict (Hodes et al, 1999). In addition the adolescents become less depressed and irritable and so may provoke less criticism and disapproval from their parents. As the adolescents' weight goes up and there is visible improvement the parents can supervise them less and obtain more support from each other and people outside the family. In addition, the parents would start to feel that they have jointly successfully overcome a difficult struggle together which might previously have engendered conflict between them. Evidence for this comes from the finding that the adolescents with good/intermediate outcome had mothers who made fewer critical comments to the fathers than if the adolescents achieved poor outcome.

The reduction in parental critical comments to adolescents has been found previously, in the pilot study (Le Grange et al, 1992a). Methodological differences between the studies, described in chapter six, include the pilot study having families with lower levels of parental critical comments to adolescents, and fewer problems in treatment progress. These may account for why the pilot study found a significant association between outcome and change in parental critical comments. In the good/intermediate outcome group there was reduction of parental critical comments, whereas in the poor outcome group they increased. However the finding that parental criticism to the adolescent decreases and the idea that this is to a considerable extent driven by disapproval about the food refusal is consistent with other studies (Robin et al, 1999). Indeed the other studies, using various measures find a reduction in family conflict and aggression (North et al, 1997; Shugar & Krueger, 1995; Robin et al, 1999).

2. No change in parental emotional overinvolvement and warmth to adolescents

It was not expected that emotional overinvolvement would change during the course of treatment. However it is very important that this has been demonstrated. This is because of the developmental model of anorexia nervosa that has implied that parental involvement with the adolescent plays a causal or contributory role in the adolescents' failure to develop autonomy. It is sometimes postulated that increasing parental involvement by encouraging them to supervise and feed their adolescents will increase problems and delay the growth of autonomy. It would be expected that this would be reflected in the emotional overinvolvement subscale of EE. It is significant that the relatively low starting levels of emotional overinvolvement do not increase. In addition, it has been demonstrated that the adolescent's autonomy increases, as reflected in the MRE socio-economic subscale. Furthermore the subscales of the EDI including measures of ineffectiveness and interpersonal distrust show improvement for some of the patients (those who had conjoint family therapy, Dare et al, 2000). Thus it can be concluded that there is no adverse effect regarding the levels of parental involvement with the treatment model adopted here. Indeed, and all the evidence points to substantially improved adolescent autonomy and improved parental satisfaction with family life.

It is striking that there is no increase in parental warmth to their adolescent children. The levels of warmth are similar to those found in other studies (e.g. Le Grange et al, 1992a). The levels throughout the treatment period are less than those of parents towards their primary school age children who do not have psychiatric disorders (Vostanis et al, 1994). This may be because of the disorder, which reduces some aspects of warmth e.g. spontaneous interest in the child. It may be that families in which an individual has anorexia nervosa tend to express less affect than in other families including warmth. However this explanation is not consistent with the increase in warmth parents make to each other during the year of treatment. An alternative explanation is that the qualities, or components of warmth change during treatment, e.g. concern diminishes and is replaced by increased enjoyable joint activities and interest in the person, but that the overall measure of warmth is not changed. Further study looking at the subtleties of communication and relating would be needed to test this idea.

3. *Increased warmth between parents*

The parents' feelings that they have worked together, the reduced burden on them of caring for an emaciated child may well have contributed to the increased warmth. The adolescents' ability to eat adequately and achieve greater independence would enable the family life cycle to progress so that the parents also have more freedom from their children. This would be reflected in more warmth, (the components of which include description of pleasurable joint activities and interest in the person). This is consistent with the finding that the final MRAOS showed positive correlation with the increase of warmth from fathers to mothers. It is also consistent with the finding that maternal warmth to father was a predictor of final BMI. In addition finding the reduction in paternal critical comments to mothers over the year of treatment was part of the general improvement in the relationship between the parents. This is to be expected in view of the improved co-operation and effectiveness regarding the crucial parenting task, refeeding the starving child that had so dominated family life. Many parents reported that they felt better able to so deal effectively with many of their children's other problems, indicating that the experience of therapy had generalised to other areas of family life. It is also likely that the experience of greater warmth between parents would contribute to reduced conflict and criticism between them.

The increased warmth and reduced paternal criticism to mothers is consistent with other studies reporting improvements in many aspects of family relationships over 1-2 years from the beginning of treatment (North et al, 1997; Shugar & Krueger, 1995; Robin et al, 1999). These studies find reduce intra-familial aggression (Shuger & Krueger, 1995; Robin et al, 1999) as well as improved global functioning (North et al, 1997).

Treatment Dropout

Eleven of the forty (27.5%) adolescents and their families dropped out of the treatment. This was surprisingly high given that there were no dropouts from the pilot study of 18 families (Le Grange et al, 1992b). The higher number of dropouts may be accounted for by the sample characteristics (the similarities and differences were discussed in chapter six). In the main study the higher levels of parental critical comments, and greater need for hospital admission, all suggest that the families

were less able to deal with their children's self-starvation effectively and perhaps the adolescents had more severe anorexia nervosa.

There was a clear relationship between the adolescents' progress and dropout, with the dropouts having significantly poorer outcome. Surprisingly at the initial assessment those who later dropped out were very similar to those who completed treatment with respect to background family and illness variables, including initial weight. However by the end of the year as can be seen from table 5.7, the dropouts had lower weight as measured by BMI, more mental state abnormalities, lower MRAOS, and more tension. The advantages of persisting in treatment indicated by weight gain are apparent within the first three months of treatment as shown in table 5.8. Significantly more of the dropouts were in the poor outcome group. In addition the greater weight gain in the first three months predicts continuation in treatment. This is evidence suggesting that the treatments are effective.

Regarding family relationships, since many of the families that dropped out refused to participate after the initial assessment in family interviews, it is not possible to be clear about the whether the dropouts had improved family relationships during the one year. However it striking with regard to EE that maternal warmth to father at the initial assessment predicted treatment dropout and displaced change in BMI during the first three months from the equation. It was surprising that the level of critical comments did not predict dropout in view of the previous study that found this association amongst adolescents and adults with eating disorder (Szmukler et al, 1985). This may mean that it is family strengths as reflected in maternal warmth to the father that leads to more effective problem solving, including being able to attend for treatment and supervise effectively the daughters' eating.

The study by Szmukler et al (1985) regarding adolescents and adults with eating disorders involved in the first Maudsley treatment study reported that 27% patients dropped out of treatment within three months of discharge from hospital. Perhaps more relevant is a study of adolescents (mean age 14.8 years, SD 2.4) with anorexia nervosa (mean duration of illness 9.8 months years, SD 8.4) (Steiner et al, 1990). This study describes the provision of more intensive treatments such as a six-week admission followed by intensive family and individual psychotherapy over approximately 14 months. Of the 36 patients who agreed to have treatment, 7 (19.4%) received only some of the in-patient treatment, 15 (41.6%) completed the in-patient programme but dropped out during the outpatient treatment, and 14 (38.8%)

completed the treatment. It is striking here how few completed the whole treatment programme. The high rate of dropout here may have been due partly to the characteristics of the treatment programme, involving admission and separation from the family.

This study was not designed to have treatment dropout as a main focus of investigation, and so it is not possible to assess the importance of many factors likely to be relevant (Mahon, 2000). For example it is known that the quality of the relationship between the families and the therapist is important (Clinton, 1996). It would also be useful to investigate the ideas held by different family members regarding the patients' needs, and this might require both qualitative and quantitative methodologies (Mahon, 2000), but this was not investigated.

Admission During Treatment

The four adolescents who were admitted during the one year of treatment had lower weight when first assessed, and this low weight persistently differentiated them from the other 36 adolescents. Three out of the four adolescents needing admission obtained poor categorical outcome at the end of the one year (i.e. <85% healthy weight and not menstruating). This was reflected in the lower MRA nutritional subscale at the final assessment. Poor weight gain during the first three months of treatment was the only predictor identified of admission. Regarding individual variables, those admitted had lower initial scores on the EAT 40 questionnaire, and poorer social adjustment at the end of treatment. Parental EE did not predict admission using multiple regression but it was found that those who required admission had at initial assessment fathers who made less warmth to mothers compared with the fathers of adolescents who were not admitted.

It is to be expected that low weight, and poor weight gain would be associated with admission. Obviously admission would be needed because of the life-threatening effect of emaciation. In addition the effect of low weight on growth needed to be considered for the younger and premenarchal patients. For one of the premenarchal adolescents who had not completed her physical growth, low weight, behavioural disturbance and family conflict all contributed to the need for admission.

While the data suggest that weight is strongly associated with admission, there may be an interaction between weight, psychological and family variables. The lower

weight gain during treatment may be related to lower EAT scores, reflecting higher denial of difficulties and more resistance to parental prompting and surveillance regarding eating. The finding that lower MR E socio-economic subscale score was associated with admission is consistent with the earlier discussion that this measure predicts general outcome and final depression. Again, the failure of the adolescents to obtain an adequate developmental trajectory, requiring good peer and family relationships, reflected in this measure, is understandably associated with the need for institutional care to influence and determine behaviour.

Surprisingly little research has previously sought to identify factors associated with admission in anorexia nervosa and the possible benefits, or limitations of this intervention. In a random allocation study of in-patient compared with out-patient psychotherapy, those who were offered a one-off assessment were more likely to have lower weight, poorer general outcome and seek in-patient treatment (Gowers et al, 1994). A more recent study has found that hospitalisation in adolescent anorexia nervosa was associated with and predicted poor outcome (Gowers et al, 2000). This was a combined prospective (35 subjects) and retrospective (40 subjects) study with data collection at only two time points over 2-7 years. Thus the study was limited in being unable to elucidate the reasons for admission. Clearly admission may have been offered to those with more severe anorexia nervosa and lower weight. This combined with poorer social adjustment of the adolescents and more stressed parents, reflected in the MRAOS, may explain why these investigators found that this scale also predicted outcome.

Deliberate Self-Harm

Deliberate self-harm occurred in four adolescents by overdose and self-mutilation. At entry to treatment, compared with those who did not harm themselves, they had higher MR C mental state scores, suggesting they were less depressed, but at the end of treatment this changed and they had lower MR C mental state scores. This is to be expected as it has been shown that for adolescent deliberate self-harm generally depressive disorder is one of the most important risk factors (Gould et al, 1998; Hollis, 1996). The data also show that those who harmed themselves had significantly higher rates of laxative abuse (i.e. lower scores on the MR laxative abuse scale). It is interesting that this was found with such a small sample. The implication is that despite being more depressed, the self-harming adolescents may be more impulsive generally. This is consistent with the association demonstrated previously between bingeing/purging, impulsivity and self-harm that occurs in

adolescents and adults with eating disorders (Garner et al, 1993; Favaro & Santonastaso, 1996). The data also show a trend for the adolescents who harm themselves to have lower final weight.

Regarding family function as measured by EE, the only finding was that self-harm occurred in association with lower paternal emotional overinvolvement. Since the levels were in the low range for both groups, it may be that the adolescents who self-harm have fathers who could be described as 'low in involvement'. The adolescents may perceive this as distance or even neglect. There may also be other differences in the family interaction where there is self-harm that this study could not elucidate. No predictive factors for deliberate self-harm could be identified. To a considerable extent this can be explained by the small sample involved. There may also be heterogeneity amongst the groups. The findings reported here should be interpreted with caution in view of the small samples. However, they may indicate useful directions for further research, especially in view of the rarity of prospective studies investigating self-harm in adolescent eating disorders.

Hypotheses Revisited

The results are now considered in relation to the hypotheses given in chapter 4. Each hypothesis is repeated here and there follows a brief commentary on the extent to which each hypothesis is supported or refuted. While some of the implications regarding these hypotheses have been discussed in the earlier parts of this chapter, the most salient points and implications are brought together here.

- 1. There will be significant improvements in weight and reductions in psychopathology during the one year of treatment, with more than 50% of adolescents achieving greater than 85% average body weight at the end of treatment (i.e. achieved good or intermediate outcome).*

The data indicate clearly that there is significant improvement in weight, as reflected in BMI and the Morgan Russell A nutritional subscale (see table 5.2). More than half of the improvement that occurs over the year takes place in the first three months of treatment. In relation to the categories of change, specified in hypothesis 1, it is clear that 25 adolescents (63%) achieve good or intermediate outcome i.e. greater than 85% average body weight by the end of the one year. Thus, hypothesis 1 is strongly supported.

The implications are that treatment results in improvement, and the rate of improvement is much greater than that found in a naturalistic follow-up of adolescents with less severe anorexia nervosa (Gillberg et al, 1994). Nevertheless, it has to be accepted that one third of adolescents have not reached healthy weight after the one year. For this group the treatment is not adequately effective. It is not known what treatment would be associated with greater weight gain. Some studies suggest poorer outcome associated with hospital admission (Gowers et al, 2000), so evidence is not available that admission is a good option for those who make slow but steady progress in outpatient treatment. Other psychological treatments that may be provided complementary to family therapy, and for which there is anecdotal evidence of benefit, are described in the next chapter.

2. *Treatment dropout will be associated with poorer outcome for the adolescents with regard to BMI, general outcome (assessed using the Morgan Russell scales) and depression.*

The data available in table 5.7 and figure 5.3 describes how there is significantly greater improvement in those adolescents who stay in treatment than those who discontinue. These greater improvement concerns defining features of the disorder such as BMI. In addition there is greater improvement in general outcome measured by the MRAOS. Rather confusingly, there is greater improvement amongst treatment completers for the MRC mental state subscale (which is mostly measuring depression), but not for the Depression scale using the Feighner criteria. Thus, there is clear support for the hypothesis that outcome defined in terms of BMI and average outcome is better by staying in treatment. There is partial support that staying in treatment improves depression.

The implications of this finding in relation to BMI and average outcome are that treatment has a significant beneficial effect. The data is consistent with the interpretation that treatment has a dose response relationship, i.e. the more that it is followed the greater the benefit. If this interpretation is correct, this is evidence for the specificity of treatment, rather than the interpretation that improvement occurs spontaneously and is simply a function of time. On this basis it may be that treatment would be beneficial if offered over a longer period of time than one year to those who were still impaired, as occurred in the study by Robin et al (1999).

An alternative explanation is that those who dropped out of treatment had a more severe form of the disorder, and would have done worse anyway. Against this is the finding that no differences were found in the characteristics of the completers and dropouts when compared at the time of entry into treatment (chapter 5, page 90). Of course it may be that the wrong differences were looked for. However, this study did find that those who dropped out had less treatment progress as defined by BMI (table 5.8). This raises the possibility that poor progress gave rise to treatment dissatisfaction, which then resulted in dropout. An alternative explanation would be that less engagement in treatment, and perhaps more difficulties in following the directives of the therapist, was followed by both poorer progress and dropout. Further prospective hypothesis driven research will be needed to investigate factors associated with dropout and treatment uptake, including family attitudes, motivation to change, and treatment satisfaction.

The partial support for the hypothesis that greater improvement in depression would occur in those who stayed in treatment may be a function of sample size and poor sensitivity of the measure. It may also occur because the greater improvement in the MRC mental state subscale in those who completed treatment was partly caused by reduction in obsessionality in this group rather than depression. An alternative explanation is that depression follows a different trajectory for recovery in anorexia nervosa compared with weight gain. There is some evidence for this in relation to the different rates of recovery from low weight and depression over the year (described in more detail earlier in this chapter). It is also relevant here that expressed emotion (critical comments) predicted outcome from depression but not weight gain (discussed under hypothesis 4). It is possible that treatment dropout affects depression less than weight gain.

3. During the treatment there will be significant improvement in family relationships, specifically reduction of critical comments from parents to their adolescent offspring.

There is definite evidence of improvement in family relationships as measured by the MR socio-economic subscale (which includes family relationships), and expressed emotion, with very significant reductions of parental critical comments to the adolescent, less paternal critical comments to the mother, and increased warmth between parents. This hypothesis is strongly supported.

This finding is consistent with other studies that show improved family relationships during the course of treatment (Crisp et al, 1991; Le Grange et al, 1992a, b; Robin et al, 1995; Shugar & Krueger, 1995). However the methods used in this study (expressed emotion is a robust measure) and the frequency of assessment provides unique data regarding the nature of the family relationship changes. Within treatment contexts, the clinical implications are that initial high parental criticism is not a reason to avoid family treatment, although it may be preferable to separate parents from the adolescents initially in sessions (see Eisler et al, 2000 for more details). Since the great majority of the discussion in sessions over the one year concerned the anorexia nervosa and how to help the adolescent achieve age appropriate milestones including eating, it is striking that parental relationships also improved so much. Clinical implications are that when there is some level of discord in families with anorexia nervosa, treating the adolescent successfully may facilitate improved parental relationships, and separate parental or marital therapy is not indicated on the basis of this data.

There are two important theoretical implications. Firstly, concerning the overall usefulness of the treatment model in which parents are initially asked to supervise or prompt their adolescent daughter to eat. This intervention takes place over months and is associated with improved family relationships, not deterioration, which many sceptics suggest this approach will cause. Thus, for most families, the increased burden is temporary. The second theoretical implication is that this approach has wide implications throughout the family and is consistent with systems approaches to understanding family life' specifically concerning the interconnectedness of relationships and individuals adjustment. This is also consistent with the view that if one individual changes, benefits may spread to all the family and obviate the need for therapies for many family members. However, this is not to deny that occasionally separate interventions might be warranted for other family members.

4. Expressed emotion, specifically critical comments from parents to their adolescent offspring, assessed at the start of treatment, will predict treatment outcome, expressed as BMI, general outcome (assessed using the Morgan Russell scales), and depression.

It was expected that expressed emotion, specifically parental critical comments to the adolescent would predict treatment outcome measured as BMI, MRAOS and depression. Surprisingly, parental critical comments did not predict improvement in

BMI or MRAOS, specifically they did not add to the prediction of outcome over variables such as age and initial BMI. This important part of the hypothesis is not supported.

The earlier study by van Furth et al (1996) had found that maternal critical comments predicted 34% of the outcome variance as measure by the MRAOS, and was more important than the other variables identified here e.g. age and initial BMI were not retained in their regression equation. The study reported here has failed to replicate van Furth et al's findings. Reasons for this have been given earlier in this chapter and include the high rate of sample loss from the van Furth study, sample differences as that study included adolescents with bulimia nervosa, and different measures of expressed emotion (van Furth et al used the Camberwell Family Interview, while in this study a whole family interview was used). There may also be methodological issues in relation to exactly how the multiple regression model was built up and the variables loaded into the statistical programme.

This failure to replicate casts doubt as to whether parental critical comments should be a specific focus of treatment. It may be a correlate of the improvement, specifically greater weight gain, compliance with eating and more effective parenting, associated with less parental disapproval.

The finding that maternal warmth to father displaces treatment dropout from the multiple regression analysis and predicted 9% of the outcome variance for BMI (see table 5.17) was surprising. This was not hypothesised and in view of the small amount of initial speech (in the first assessment) by mothers about fathers this should be treated with caution. Furthermore, maternal warmth to father does not correlate with final BMI, which would be expected if it is a significant predictor of BMI (see power considerations, chapter 4). The finding may be an artefact of the multiple regression model or chance association.

However it is striking that paternal critical comments to the adolescents predicted final depression. It might be expected on theoretical grounds that parental critical comments predicts the course of depression in those with anorexia nervosa as it is a factor in the course adolescent depression (Asarnow et al, 1993). However it might be expected that maternal critical comments would be more important, especially as mothers have more face-to-face contact with the adolescents. It is also relevant here that maternal and paternal critical comments do not correlate (Hodes et al, 1999, see

appendix 1). Thus, it may be that paternal critical comments do have some specificity in the course of the depression. The implications at a clinical level are that where possible fathers should be involved in treatment. At a research level, this is a reminder that fathers should be involved in further studies of eating disorders, and the tendency to focus on mother-daughter relationships in eating disorder may have some limitations.

Given the findings from this study, and the differences from the van Furth et al (1996), further research with parental expressed emotion with larger samples is warranted.

Chapter Eight

CONCLUSION: IMPLICATIONS FOR FAMILY THERAPY AND MANAGEMENT OF ADOLESCENT ANOREXIA NERVOSA

Efficacy of Family Therapy

1 Benefits

The study has shown that the great majority of families who were offered participation in the one-year treatment programme were keen to take this up. Almost all adolescents made significant gains during treatment. The study is consistent with the findings from the pilot study (Le Grange et al, 1992a, b) that many adolescents and families can be managed as outpatients and do not require admission. This is important to establish, as outpatient management is almost certainly preferred by the majority of adolescents and families. It would also be preferred by the health service funding bodies, as it will result in substantially lower treatment costs than admission.

It is very striking that for the adolescents only family treatment was provided, and for many this was adequate with complete return to normal functioning. The overall benefit from these directive forms of family therapy was substantial, with effect sizes for weight gain of 1.2, and the Morgan Russell Average Outcome Score of 1.4 (Eisler et al, 2000) This suggests that multi-modal treatments, or complex treatment packages do not need to be provided routinely to all adolescents.

This has substantial implications. Firstly, within service contexts it is much simpler and more economical to assign one therapist to a family and adolescent than to offer a number of therapists with a range of psychotherapeutic skills who could work together. Of course there does need to be adequate monitoring of weight, growth, mood and suicidal intent during the course of treatment, and this may require psychiatric involvement.

Secondly the data also show that many aspects of the disturbance such as depression and abnormal eating attitudes were dramatically improved even though not specifically targeted. This improvement is so substantial that a treatment, as yet undiscovered, would require unusual efficacy for it to add to these gains. Exceptions

would be adolescents, not encountered in this study, suffering from disorders such as depressive psychosis, or obsessive compulsive disorder unrelated to eating and weight that predated the anorexia nervosa.

2 Limitations

The outpatient family treatments offered in the study were not universally popular. This is reflected in the relatively high dropout rate. While for a small number of families dropout was still associated with good outcome, overall the adolescents in the drop-out group had worse outcome. Therefore it is important to consider the reasons for treatment discontinuation. Reasons given by families was lack of confidence that the family needed to be involved, rather the adolescent herself should be the focus of intervention. Other families suggested that the distress of sessions, or conflict or fear of conflict in the family would make participation difficult. There were two families in which the adolescents had severe social adjustment problems (one became dependent on narcotics), and left home during the family treatment, and the parents appeared unable or unwilling to bring their daughters. In a small number of families, especially those who refused to participate in the study, there was a feeling that admission of the adolescent for weight restoration would be preferable for her and the family.

A related aspect is that the motivation of the parents and adolescents was not the focus of specific interventions. Although their attitudes to change were discussed, the therapy provided was not as developed as that described in recent years to improve motivation to change (Prochaska et al, 1988; Ward et al, 1995). This is relevant for adolescent anorexia nervosa as it has been shown that adolescents' motivation to change is one factor that influences outcome (Smyth et al, 2000).

Although the outpatient treatment approach may be economical to health services, the treatments involved considerable costs, at least in the first few months, for many families. Typically mothers would spend hours supervising and supporting their daughters during mealtimes. Time would be spent listening to their daughters' distress, and sometimes placating or explaining the situation to bewildered fathers. Time would be spent in travelling and attending outpatient appointments and assessments. There was also a high level of emotional distress in many families initially. In view of this it was gratifying that there was an improvement in relationships between parents, and between them and adolescents as therapy

progressed. As the adolescents' weight increased so parents could resume their usual obligations, including return to work. Thus the burden of care falls within the first few months of treatment for the majority of cases. In only a small number were there persistent severe problems for the adolescents with burden of the parents throughout the treatment year. This was true for the four adolescents who required inpatient treatment, three of whom obtained poor outcome.

Implications for Family Therapy

It is important to consider how the findings should shape the family treatments for adolescents with anorexia nervosa.

1. Direction and Psychoeducation

The inclusion of psychoeducation is a requirement for the beginning of treatment. This will function to provide information of the disorder, and explain the main features of the multifactorial model of aetiology, in which family interaction plays little or no part (Dare & Eisler, 1993). This may reduce parental guilt and facilitate parental motivation to change. This initial directive stance is predicated on the therapists' expertise and authority.

2. Conjoint or Separated Family Therapy

The treatments carried out in this study remained the same for the whole year. In service settings it is likely that therapists will carry out a combination of separated and conjoint sessions. This flexibility should accommodate the families' requests for differing kinds of contact with the therapist. Furthermore, in usual clinical contexts the family may include grandparents or others who are in a position to help the adolescent.

Research justification for such flexible approaches to therapy comes from other data from this study. It has been shown that there was greater benefit from separated family therapy over conjoint family with regard to categories of outcome in families where there is a high level of parental critical comments (Eisler et al, 2000). However it was very striking that the conjoint family therapy group compared with separated family therapy showed greater reduction in depression (Eisler et al, 2000) and interpersonal distrust and ineffectiveness (Dare et al, 2000). In view of these findings the therapists' judgement is required to decide when sessions should involve the whole family. It may be that conjoint

family therapy models and facilitates the development of a supportive dialogue between parents and adolescents, which enables the growth of age appropriate autonomy. Presumably this is more likely to happen in low stress families, i.e. reflected in lower parental criticism to the adolescents.

3. Reducing Treatment Dropout

In view of the high risk of treatment dropout and the poorer outcome of this group, attempts should be made to reduce this. Suggestions from work with the families are that sessions should not be aversive and involve high conflict where this can be avoided. By implication, family meals in clinic settings in which the parents would be expected to supervise their daughters' eating would be stressful and potentially increase risk of dropout. Treatment engagement would require following as much as possible the families pace of change. This might include, even early in treatment, less frequent sessions, or some sessions in which issues other than eating and weight are discussed, and exploring issues of concern to the parents and adolescents. The clinicians' judgement will also have to be used to consider whether to provide separated or conjoint sessions as a way of managing conflict, and achieving therapeutic goals.

4. Reducing Parental Critical Comments

This study showed that parental critical comments to the adolescents were a predictor of final depression. This is consistent with the substantial literature linking parental criticism and discordant relationships to childhood depression, (Asarnow et al, 1994; Schwartz et al, 1990). For this reason attempts should be made to reduce this aspect of speech style. A range of techniques may be appropriate. These may include psychoeducation, with explanation of the vicious cycle that may be set up regarding the links between parental criticism and childhood irritability, withdrawal, and uncooperative behaviour, symptoms of depression, which may then give rise to further criticism. Structural family therapy techniques such as reframing, and strengthening parental functioning, so enhancing feelings of self-efficacy, may be useful. The circular interviewing techniques (Selvini Palazzoli et al, 1980) may also be associated with reduction of criticism (Vostanis et al, 1992).

Further Developments in Family Management: Multi-family Groups

While multi-family groups have been used for many years, it is only recently that this method of intervention has been applied to eating disorders (Dare and Eisler, 2000). The group work involves meetings with whole families as well as the opportunity for work with parents alone, and sufferers and their siblings (Dare and Eisler, 2000). The work may extend over days and includes psychoeducation, meal planning and other elements. Feedback from parents who have been involved in these programmes is positive, and frequently parents say they are able to look on their problems in a different way. This may be because their own and offsprings' problems are 'normalised' in the sense of being seen to be not unique. Simultaneously the families become aware of their differences and so less guilty that some aspect of their experience or relating has caused the disorder.

Indications for the multi-family groups are yet to be defined. However the results of the research described here raise the possibility that problems inadequately helped by outpatient family therapy could be targeted by more intensive family intervention. Such problems might include adolescents' and parents' withdrawal and isolation, and low motivation to change with risk of dropout. Persistent parental criticism and discord and adolescents' depression may also be addressed, perhaps with addition of specific therapeutic elements for dealing with adolescents' difficult behaviour. It might also be appropriate to sequence treatments so that families are selected for the multi-family groups if there is a defined lack of progress in out-patient family management.

Family Management Complementary to other Interventions

1 Motivational Therapy

This study has found high levels of treatment dropout, and this group of adolescents achieved poorer outcome than those who persist in treatment. Although the reasons for treatment dropout were not systematically explored here, ambivalence to change has been well described for adolescents and families. In view of this specific intervention to address the ambivalence and increase motivation to change would seem to be desirable for a proportion of families (Prochaska & Di Clemente, 1982; Ward et al, 1996). Such approaches could be provided complementary to family management.

2 Individual Psychological Treatment

In view of the dramatic weight gain and associated improvement in eating attitudes and mood in the first few months of family treatment, it would seem appropriate to withhold individual psychotherapy (whether cognitive behavioural therapy, or psychodynamic therapy) until after that time period. If the expected gains are achieved then the need for specific individual therapy will of course recede. However there may be adolescents who achieve adequate weight gain but have persistent abnormal eating attitudes, with associated risk of relapse, or persistent depression, or difficulties in social relating. In such situations there should be consideration about the relative benefits of conjoint or separated sessions, in the light of the findings discussed above. It may then be necessary to provide further individual treatment. Depression and abnormal eating attitudes may respond to cognitive behavioural therapy (Harrington et al, 1998; Serfaty et al, 1999).

3 Family Therapy and Inpatient Treatment

It is accepted that a small proportion of adolescents with anorexia nervosa will need admission. It is also established that family therapy may be complementary to admission and further care. The family therapy would aim to support the admission process, progress on the ward and reintegration back to the after discharge. This study has suggested what aspects of family relating are associated with good outcome, hence what to aim for in treatment in these difficult situations.

Implications for Family Therapy Research

The study reported here is part of a very unusual programme of research into family therapy and other treatments for anorexia nervosa (Dare et al, 1995). The clinical research links in the family therapy of anorexia nervosa have become almost paradigmatic for the family therapy field.

The characteristics of the programme have been the sequencing of treatment trials, each of which has focussed on more defined patient populations, and evaluation of treatments with external validity. Furthermore, in addition to the investigation of outcomes, the programme has continually investigated processes of change, both at the individual, interpersonal and family levels. Understanding the processes of

change is vital for the development of further treatment research and understanding of psychopathological mechanisms (Kazdin, 2000).

The limitations of the study have been discussed fully in chapter six and do not need to be repeated. However, it is important to bear in mind that since the study was designed in the late 1980's there have been significant development of clinical trials methodologies (Begg et al, 1996; Hotopf et al, 1999). Undoubtedly if the study were to be designed now it would have a number of refinements, some of which are described in the CONSORT statement (Begg et al, 1996). It is possible for family therapy, like other psychological treatments, to fulfil many of these standards. Nevertheless, this area of research will never reach the level of methodological 'purity' that can be attained in pharmacological trials in view of the impossibility of reconciling informed consent with design features such as double blind treatment assignment, calculating the 'dose' of treatment and so on.

Recent trends in health care since the study began include greater interest in health services research. Of particular relevance here is the economics of these treatments, in view of the fact that they are outpatient therapies and would appear to offer considerable savings over in-patient management. Furthermore patients' and families' attitudes to treatments and satisfaction with them are now topical areas of inquiry. These areas are rarely investigated in family therapy research, but nevertheless would make a useful contribution.

Finally, it should be acknowledged that in recent years the family therapy field has changed significantly. There has been influence from the post-modern perspectives, with great interest in social constructionism (Gergen & McNamee, 1992). Therapy is looked upon as a dialogue between therapist and the family, and the position of the therapist as 'expert' is eschewed. Given the criticisms that such approaches have evoked (Pilgrim, 2000), attempts at reconciliation have been made (Pocock, 1995). The relevance of these changes in clinical practise is that in one sense research lags behind. By the time one family treatment trial is completed, family therapists sceptical of research can claim that new therapeutic techniques are already being used and are de rigueur. The orientation for the clinical family therapy-research interface will need to come from an understanding of family life and mechanisms for development of disorder that should influence, and be influenced by, therapeutic issues of technique and theory.

Concluding Comments

The study reported here concerning changes of the adolescent and parental expressed emotion during the family treatment of adolescent anorexia nervosa is only the fourth treatment study for this group of subjects. There are only a small number of other studies that have investigated family or individual psychological treatments for anorexia nervosa. The data provided here complements the previously published reports from the same study (Dare et al, 2000; Eisler et al, 2000) that focus on comparison of the effects of separated and conjoined family treatment. Put together these reports have further clarified the place of family treatments in the management of adolescent anorexia nervosa. They suggest that this treatment should have a more defined and prominent place than is sometimes given to it (Steinhausen, 1994, 1997). Nevertheless, in future years further trials of family therapy and other treatment approaches may help specify the exact role of family treatments in the management of adolescent anorexia nervosa. However, given the difficulty of carrying out such treatment research the results of these studies will be useful for many years to come.

References

- Altman DG (1991) *Practical Statistics for Medical Research*. London: Chapman & Hall.
- Anderson CM (1988) The selection of measures in family therapy research. In: LC Wynne (Ed.) *The State of the Art in Family Therapy Research*. New York: Family Process Press.
- Andolfi M, Angelo C, Menghi P, Nicolo-Corigliano AM (1983) *Behind the Family Mask. Therapeutic Change in Rigid Family Systems*. New York: Brunner/Mazel.
- Angold A, Costello, EJ, Messer SC & Pickles A (1995) Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research*, 5, 237-249
- Aponte H & Hoffman L (1973) The open door: A structural approach to a family with an anorectic child. *Family Process*, 12, 1-44.
- American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders. DSM IV*. 4th Edition. Washington, DC: American Psychiatric Association.
- Asarnow, JR, Goldstein, MJ, Tompson, M & Guthrie, D. (1993) One-year outcomes of depressive disorders in child psychiatric in-patients: evaluation of the prognostic power of a brief measure of expressed emotion. *Journal of Child Psychology and Psychiatry*, 34, 129-137.
- Asarnow, J.R, Tompson, M., Hamilton, EB, Goldstein, MJ. & Guthrie, D. (1994) Family-expressed emotion, childhood-onset depression, and childhood-onset schizophrenia spectrum disorders: is expressed emotion a nonspecific correlate of child psychopathology or a specific risk factor for depression? *Journal of Abnormal Child Psychology*, 22, 129-146.
- Bateson G, Jackson DD, Haley, J & Weakland JH (1956) Toward a theory of schizophrenia. *Behavioural Science*, 1, 251-264.

Bateson G (1973) *Steps to Ecology of Mind*. St Albans: Paladin

Bebbington P & Kuipers L (1994) The clinical utility of expressed emotion in schizophrenia. *Acta Psychiatrica Scandinavica Supplement*, 382, 46-53

Begg C, Cho M, Eastwood, S, Horton, R, Moher, D., Olkin, I, Pitkin, R, Rennie, D, Schulz, KF Simel, D, Stroup, DF. (1996) Improving the quality of reporting of randomised controlled trials. The CONSORT statement. *Journal of the American Medical Association*, 28, 637-639.

Berkowitz, R. (1987). Rating expressed emotion from initial family therapy sessions (a pilot study). *Journal of Family Therapy*, 9, 27-37.

Beumont CC, Beumont PJV & Touyz S (1995) Symptoms of obsessive-compulsive disorder in hospitalised eating disorder patients: a study using the Maudsley Obsessional-compulsive inventory (MOCI). *European Eating Disorders Review*, 3, 217-227.

Boscolo L, Cechin G, Hoffman L, Penn P (1987) *Milan Systemic Family Therapy*. Plymouth: Basic Books.

Boszormenyi-Nagy I & Spark GM (1973) *Invisible Loyalties*. New York: Harper & Row.

Bowen M (1978) *Family Therapy in Clinical Practice*. New York: Aranson.

Brown GW & Rutter M (1966) The measurement of family activities and relationships: A methodological study. *Human Relations*, 19, 241-263.

Bruch H. (1973) *Eating Disorders: Obesity, Anorexia Nervosa and the Person Within*. New York: Basic Books

Bruch H (1978) *The Golden Cage. The Enigma of Anorexia Nervosa*. Cambridge, Mass: Harvard University Press.

Bruch H (1982) Anorexia nervosa: Therapy and theory. *American Journal of Psychiatry*, 139, 1531-1538.

Bruch H (1985) Four decades of eating disorders. In DM Garner & PE Garfinkel (Eds.) *Handbook of Psychotherapy for Anorexia Nervosa and Bulimia*. New York & London: Guilford Press.

Brumberg J (1988) *Fasting Girls. The History of Anorexia Nervosa*. Cambridge (Mass): Harvard University Press.

Bryant-Waugh R, Knibbs J, Fosson A, Kaminski Z, & Lask B (1988) Long-term follow up of patients with early onset anorexia nervosa. *Archives of Disease in Childhood*, 63, 5-9.

Cantwell DP, Lewisohn PM, Rohde P & Seeley J (1997) Correspondence between adolescent report and parent report of psychiatric diagnostic data. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 610-619.

Cassidy E, Allsopp M & Williams T (1999) Obsessive compulsive symptoms at initial presentation of adolescent eating disorders. *European Child and Adolescent Psychiatry*, 8, 193-199.

Chambers WJ, Puig-Antich J, Hirsch M, Paez P, Ambrosini PJ, Tabrizi MA & Davies M (1985) The assessment of affective disorders in children and adolescents by semi-structured interview. Test-retest reliability of the schedule for affective disorders and schizophrenia for school-age children, present episode version. *Archives of General Psychiatry*, 42, 696-702.

Channon S, & De Silva WP (1985) Psychological correlates of weight gain in patients with anorexia nervosa. *Journal of Psychiatric Research*, 19, 267-271.

Channon S, De Silva P, Hemsley D, & Perkins R (1989) A controlled trial of cognitive behavioural and behavioural treatment of anorexia nervosa. *Behaviour Research and Therapy*, 27, 529-535.

Chorpita BF, Barlow DH, Albano AM & Daleiden EL (1998) Methodological strategies in child clinical trials: advancing the efficacy and effectiveness of psychosocial treatments. *Journal of Abnormal Child Psychology*, 26, 7-16.

Clark DA & Bolton D (1985) An investigation of two self-report measures of obsessional phenomena in obsessive compulsive adolescents: research note. *Journal of Child Psychology and Psychiatry*, 26, 429-437.

Clinton DN (1996) Why do eating disorder patients drop out? *Psychotherapy and Psychosomatics*, 65, 29-35.

Cole TJ (1994) Do growth chart centiles need a facelift? *British Medical Journal*, 308, 641-642.

Cole TJ, Freeman JV & Preece MA (1995) Body mass index reference curves for the UK, 1990. *Archives of Disease in Childhood*, 73, 25-29.

Crisp AH (1980) *Anorexia Nervosa: Let Me Be*. London: Academic Press.

Crisp AH, Norton K, Gowers S, Halek C, Bowyer C, Yeldham D, Levett G & Bhat A (1991) A controlled study of the effect of therapies aimed at adolescent and family psychopathology in anorexia nervosa. *British Journal of Psychiatry*, 159, 325-33.

Dare C (1979) Psychoanalysis and systems in family therapy. *Journal of Family Therapy*, 1, 137-156.

Dare C (1983) Family therapy for families containing an anorectic youngster. In *Understanding Anorexia Nervosa and Bulimia*. Report of the IVth Ross Conference on Medical Research. Ohio, Columbus: Ross Laboratories.

Dare C (1985) Family therapy. In: M Rutter & L Hersov (Eds.) *Child and Adolescent Psychiatry. Modern Approaches*. 2nd Edition. Oxford: Blackwell Scientific Publications.

Dare C, Chania E, Eisler I, Hodes M. & Dodge E (2000) The eating disorder inventory as an instrument to explore change in adolescents in family therapy for anorexia nervosa. *European Eating Disorders Review*, 8, 369-383.

Dare C & Eisler I (1992) Family therapy for anorexia nervosa. In: PJ Cooper & A Stein (Eds) *Feeding Problems and Eating Disorders in Children and Adolescents*. Harwood Academic Publishers, Chur.

Dare C & Eisler I (1995) Family therapy. In: GI Szmukler, C Dare & J Treasure (Eds) *Eating Disorders: Handbook of Theory, Treatment and Research*. Chichester: John Wiley & Sons.

Dare C & Eisler I (1997) Family therapy for anorexia nervosa. In: DM Garner & PE Garfinkel (Eds) *Handbook of Treatment for Anorexia nervosa and Bulimia nervosa*. 2nd Ed., New York: Guilford.

Dare C & Eisler I (2000) A multi-family group day treatment programme for adolescent eating disorder. *European Eating Disorders Review*, 8, 4-18.

Dare C, Eisler I, Colahan M, Crowther C, Senior R & Asen E (1995) The listening heart and the Chi square: Clinical and empirical perceptions in the family therapy of anorexia nervosa. *Journal of Family Therapy*, 17, 19-45.

Dare C, Eisler I, Russell GFM & Szmukler GI (1990) Family therapy for anorexia nervosa: Implications from the results of a controlled trial of family and individual therapy. *Journal of Marital and Family Therapy*, 16, 39-57.

Dare C & Szmukler G (1991) The family therapy of early onset, short history anorexia nervosa. In: D Blake Woodside & L Shekter-Wolfson (Eds.) *Family Approaches in Treatment of Eating Disorders*. Washington, DC: American Psychiatric Press.

Department of Psychiatry and Child Psychiatry, Institute of Psychiatry and Maudsley Hospital (1987) *Psychiatric Examination*, 2nd edn. Oxford: Oxford Medical Publications.

Edwards G (1987) Anorexia and the family. In: M Lawrence (Ed.) *Fed Up and Hungry. Women, Oppression and Food*. London: The Women's Press.

Eisler I (1988) Anorexia nervosa and the family. In D Scott (Ed) *Practical Approaches to Bulimia and Anorexia Nervosa*. London: Croom Helm.

Eisler I (1995) Family models of eating disorders. In GI Szmukler, C Dare & J Treasure (Eds) *Eating Disorders: Handbook of Theory, Treatment and Research*. Chichester: John Wiley & Sons.

Eisler I, Dare C, Hodes M, Russell G, Dodge E, & Le Grange D (2000) Family therapy for adolescent anorexia nervosa: the results of a controlled comparison of two family interventions. *Journal of Child Psychology and Psychiatry*, 41, 727-736.

Eisler I & Szmukler G (1985) Social class as a confounding variable in the Eating Attitudes Test. *Journal of Psychiatric Research*, 19, 171-176.

Eisler I, Dare C, Russell GFM, Szmukler GI, Le Grange D & Dodge E (1997) Family and individual therapy in anorexia nervosa. A 5-year follow-up. *Archives of General Psychiatry*. 54,1025-30

Everitt B.S. (1998) Analysis of longitudinal data. Beyond MANOVA. *British Journal of Psychiatry*, 172, 7-10.

Fahy TA (1991) Obsessional symptoms in eating disorders. *Behaviour Research and Therapy*, 29, 113-117.

Fairburn CG (1993) Interpersonal psychotherapy for bulimia nervosa. In GL Klerman & MM Weissman (Eds.) *New Applications of Interpersonal Psychotherapy*. Washington, DC: American Psychiatric Association.

Fairburn CG, Norman PA, Welch SL, O'Connor ME, Doll HA & Peveler RC (1995) A prospective study of outcome in bulimia nervosa and the long-term effects of three psychological treatments. *Archives of General Psychiatry*, 52, 304-12.

Favaro A & Santonataso P (1996) Purging behaviours, suicide attempts and psychiatric symptoms in 398 eating disorder subjects. *International Journal of Eating Disorders*, 20, 99-103.

Feighner JP, Robins E, Guze SB, Woodruff RA & Winokur G. & Munoz R. (1972) Diagnostic criteria for use in psychiatric research. *Archives of General Psychiatry*. 26, 57-63.

Field A (2000) *Discovering Statistics using SPSS for Windows*. London: Sage.

Freeman RF (1996) Low levels of interrater reliability in a standard measure of outcome in eating disorders (The modified Morgan-Russell Assessment Schedule). *International Journal of Eating Disorders*, 20, 51-56.

Freeman CP, Barry F, Dunkeld-Turnbull J & Henderson A (1988) Controlled trial of psychotherapy of bulimia nervosa. *British Medical Journal*, 296, 521-525.

Freeman RK, Walker M, & Ben-Tovim DI, (1996) Low levels of interrater reliability in a standard measure of outcome in eating disorders (The Modified Morgan Russell Assessment Schedule). *International Journal of Eating Disorders*, **20**, 51 - 56.

Fundudis T (1986) Anorexia nervosa in a pre-adolescent girl: A multi-modal behaviour therapy approach. *Journal of Child Psychology and Psychiatry*, 27, 261-273.

Garner DM (1988) Anorexia nervosa. In: M Hersen & CG Last (Eds.) *Child Behavior Therapy Casebook*. New York: Plenum Press.

Garner DM & Garfinkel PE (1979) The eating attitudes test: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, 10, 647 - 656.

Garner DM, Garner MV & Rosen LW (1993) Anorexia nervosa restrictors who purge: implications for subtyping anorexia nervosa. *International Journal of Eating Disorders*, 13, 171-185.

Garner DM, Olmstead MP, Bohr Y, & Garfinkel PE, (1982) The Eating Attitude Test: Psychometric features and clinical correlates. *Psychological Medicine*, 12, 871 - 878.

Garner DM, Olmstead MP, & Polivy J, (1983) Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, 2, 15 - 34.

Garner DM, Vitousek KM, & Pike KM (1997) Cognitive-behavioral therapy for anorexia nervosa. In DM Garner & PE Garfinkel (Eds) *Handbook of Treatment for Anorexia nervosa and Bulimia nervosa*. 2nd Ed., New York: Guilford.

Geddes & Harrison (1997) Closing the gap between research and practice. *British Journal of Psychiatry*, 171, 220-225.

Gergen KJ & McNamee S (1992) *Therapy as Social Construction*. London: Sage.

Gillberg IC, Rastam M, & Gillberg C (1994) Anorexia nervosa outcome: Six-year controlled longitudinal study of 51 cases including a population cohort. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33, 729-739.

Gorell Barnes G (1985) Systems theory and family therapy. In: M Rutter & L Hersov (Eds.) *Child and Adolescent Psychiatry. Modern Approaches*. 2nd Edition. Oxford: Blackwell Scientific Publications.

Gould MS, King R, Greenwald S, Fisher P, Schwab-Stone M, Kramer R, Flisher AJ, Goodman S, Canino G, Shaffer D (1998) Psychopathology associated with suicidal ideation and attempts among children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37, 915-923.

Gowers S, Norton K, Halek C, & Crisp AH (1994) Outcome of outpatient psychotherapy in a random allocation treatment study of anorexia nervosa. *International Journal of Eating Disorders*, 15, 165-177.

Gowers SG, Weetman J, Shore A, Hossain F & Elvins R (2000) Impact of hospitalisation on the outcome of adolescent anorexia nervosa. *British Journal of Psychiatry*, 176, 138-141.

Gull WW (1874) Anorexia nervosa (apepsia hysterica, anorexia hysterica). *Transactions of the Clinical Society of London*, 7, 222-228.

Haley J (1976) *Problem Solving Therapy*. San Francisco: Jossey-Bass.

Hall A & Crisp AH (1987) Brief psychotherapy in the treatment of anorexia nervosa. Outcome at one year. *British Journal of Psychiatry*, 151, 185-191.

Harrington R, Whittaker J & Shoebridge P (1998) Psychological treatment of depression in children and adolescents: A review of treatment research. *British Journal of Psychiatry*, 173, 291-298.

Heebink DM & Halmi KA (1995) Psychopharmacology in adolescents with eating disorders. In: H-Ch Steinhausen (Ed) *Eating Disorders in Adolescence. Anorexia and Bulimia Nervosa*. Berlin & New York: Walter de Gruyter.

Herpertz-Dahlmann BM & Remschmidt H (1993a) Depression in anorexia nervosa at follow-up. *International Journal of Eating Disorders*, 14, 163-169.

Herpertz-Dahlmann BM & Remschmidt H (1993b) Depression and psychosocial adjustment in adolescent anorexia nervosa. A controlled 3-year follow-up study. *European Child and Adolescent Psychiatry*, 2, 146-154.

Herpertz-Dahlmann BM & Remschmidt H (1995) Anorexia nervosa and depression: results of a longitudinal study. In H-C Steinhausen (Ed.) *Eating Disorders in Adolescence. Anorexia and Bulimia Nervosa*. Berlin & New York: Walter de Gruyter.

Herzog DB, Keller M, Sacks N, Yeh C & Pai S (1992) Psychiatric comorbidity in treatment-seeking anorexics and bulimics. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 810-818.

Herzog DB Sacks NR, Keller MB, Lavori PW, von Ranson KB & Gray HM (1993) Patterns and predictors of recovery in anorexia nervosa and bulimia nervosa. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 835-842.

Hirsch SR & Leff J (1976) *Abnormalities in Parents of Schizophrenics*. Institute of Psychiatry Maudsley Monograph. No 22. London: Oxford University Press.

Hodas G, Liebman R, & Collins MJ. (1982) Paediatric hospitalisation in the treatment of anorexia nervosa. In: HT Harbin (Ed) *The Psychiatric Hospital and the Family*. Jamaica (NY): Spectrum Publications.

Hodes M, Dare C, Dodge E & Eisler I (1999) The Assessment of Expressed Emotion in a Standardised Family Interview. *Journal of Child Psychology and Psychiatry*. 40, 617-625.

Hodes M & Le Grange D (1993) Expressed Emotion in the investigation of eating disorders. *International Journal of Eating Disorders*, 13, 279-288.

Hodgson RJ & Rachman S (1977) Obsessional-compulsive complaints. *Behaviour Research and Therapy*, 15, 389-395

Hoffman L (1981) *Foundations of Family Therapy: A Conceptual Framework for Systems Change*. New York: Basic Books.

Hollis C (1996) Depression, family environment and adolescent suicidal behaviour. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 622-630.

Hotopf M, Churchill R & Lewis G (1999) Pragmatic randomised controlled trials in psychiatry. *British Journal of Psychiatry*, 175, 217-223.

Jacob T & Tennenbaum DL (1988) Family assessment methods. In M Rutter, AH Tuma & IS Lann (Eds.) *Assessment and Diagnosis in Child Psychopathology*. New York & London: The Guildford Press.

Joiner TE & Heatherton TF (1998) First- and second-order factor structure of five subscales of the Eating Disorders Inventory. *International Journal of Eating Disorders*, 23, 189-98

Kavanagh DJ (1992) Recent developments in expressed emotion and schizophrenia. *British Journal of Psychiatry*, 160, 601-620.

Kazdin A (2000) Developing a research agenda for child and adolescent psychotherapy. *Archives of General Psychiatry*, 57, 829-835.

Kinston W & Loader P (1984) Eliciting whole-family interaction with a standardised clinical interview. *Journal of Family Therapy*, 6, 347-363.

Kinston W & Loader P (1986) Preliminary psychometric evaluation of a standardized clinical family interview. *Journal of Family Therapy*, 8, 351-369.

Knibbs J (1993) Behaviour therapy. In: B Lask & R Bryant Waugh (Eds.) *Childhood Onset Anorexia Nervosa and Related Eating Disorders*. Hove, U.K.: Lawrence Erlbaum Associates.

Kog E & Vandereycken W (1989) The facts: a review of research data on eating disorder families. In W Vandereycken, E Kog, J Vanderlinden (Eds) *The Family Approach to Eating Disorders. Assessment and treatment of Anorexia Nervosa and Bulimia*. New York: PMA Publishing Corp.

Lazarus AA (1981) *The Practice of Multimodal Therapy*. New York: McGraw-Hill.

Le Grange D, Eisler I, Dare C & Hodes M (1992a) Family criticism and self-starvation: A study of expressed emotion. *Journal of Family Therapy*, 14, 177-192.

Le Grange D, Eisler I, Dare C & Russell GFM (1992b) Evaluation of family therapy in anorexia nervosa: a pilot study. *International Journal of Eating Disorders*, 12, 347-357.

Leff J & Vaughn C (1985). *Expressed Emotion in Families: Its Significance for Mental Illness*. New York: Guilford Press, Inc.

Liebman R, Minuchin S & Baker L (1974) An integrated treatment program for anorexia nervosa. *American Journal of Psychiatry*, 131, 432-436

Liebman R, Sargent J, & Silver M. (1983) A family systems orientation to the treatment of anorexia nervosa. *Journal of the American Academy of Child Psychiatry*, 22, 128-133.

Lund C, Jorgensen J, Stage KB & Sorensen T (1999) Interrater reliability of a Danish version of the Morgan Russell scale for assessment of anorexia nervosa. *International Journal of Eating Disorders*, 25, 105-108.

Machin D & Campbell MJ (1987) *Statistical Tables for the Design of Clinical Trials*. Oxford: Blackwell Scientific Publications.

Madanes C (1981) *Strategic Family Therapy*. San Francisco: Josey-Bass.

Mahon J (2000) Dropping out from psychological treatment for eating disorders: what are the issues? *European Eating Disorders Review*, 8, 198-216.

Mann AH, Wakeling A, Wood K, Monck E, Dobbs R & Szmukler G (1983) Screening for abnormal eating attitudes and psychiatric morbidity in an unselected population of 15 year-old schoolgirls. *Psychological Medicine*, 13, 573-580.

Martin FE (1983) Subgroups in anorexia nervosa: a family systems study. In PL Derby, PE Garfinkel, DM Garner, DV Cossina (Eds.) *Anorexia Nervosa: Recent Developments in Research*. New York: AR Liss.

Martin FE (1985) The treatment and outcome of anorexia nervosa in adolescents: a prospective study and five year follow-up. *Journal of Psychiatric Research*. 19, 509-514

Mayer LES & Walsh BT (1998) Pharmacotherapy of eating disorders. In: HW Hoek, JL Treasure, & MA Katzman (Eds.) *Neurobiology of Eating Disorders*. Chichester: John Wiley.

Minuchin S (1970) The use of an ecological framework in the treatment of a child. In: E Anthony & C Koupernik (Eds.) *The Child in His Family*. New York: John Wiley.

Minuchin S (1984) An anorectic family: Repatterning through therapy. In: S Minuchin *Family Kaleidoscope*. Cambridge, (Mass): Harvard University Press.

Minuchin S, Baker L, Rosman BI, Liebman R, Milman L & Todd TI (1975) A conceptual model of psychosomatic illness in childhood. *Archives of General Psychiatry*, 32, 1031-1038.

Minuchin S & Fishman (1981) *Family Therapy Techniques*. Cambridge, (Mass): Harvard University Press.

Minuchin S, Rosman BI, & Baker I (1978) *Psychosomatic families: Anorexia nervosa in Context*. Cambridge, (Mass): Harvard University Press.

Monck E, Graham P, Richman N & Dobbs R (1990) Eating and weight-control problems in a community population of adolescent girls aged 15-20 years. In H Remschmidt & MH Schmidt (Eds.) *Child and Youth Psychiatry: European Perspectives. Volume 1. Anorexia Nervosa*. Toronto: Hogrefe & Huber Publishers.

Morgan HG & Russell GFM (1975) Value of family background and clinical features as prediction of long-term outcome in anorexia nervosa: A follow-up of 41 patients. *Psychological Medicine*, 5, 355 - 372

Morgan HG & Hayward AE (1988) Clinical assessment of anorexia nervosa. The Morgan-Russell Assessment Schedule. *British Journal of Psychiatry*, 47, 149-157.

Mulligan J & Voss LD (1999) Identifying very fat and very thin children: test of criterion standards for screening test. *British Medical Journal*, 319, 1103-1104.

North C & Gowers SG (1999) Anorexia nervosa, psychopathology and outcome. *International Journal of Eating Disorders*, 26, 386-391.

North C, Gowers S & Byram V (1997) Family functioning and life events in the outcome of adolescent anorexia nervosa. *British Journal of Psychiatry*, 171, 545-549.

Oehlschlagel-Akiyoshi J, Malewski P, & Mahon J (1999) How to define anorectic weight. *European Eating Disorders Review*, 7, 321-333.

Olson DH, Sprenkle DH & Russell CS (1979) Circumplex model of marital and family systems I: Cohesion and adaptability dimensions, family types and clinical applications. *Family Process*, 18, 3-28.

Orbach S (1978) *Fat is a Feminist Issue*. New York: Berkeley Press.

Papp P (1980) The Greek chorus and other techniques of paradoxical therapy. *Family Process*, 19, 45-57.

Papp P (1983) *The Process of Change*. New York/London: Guilford Press.

Perednia C, Van Vrecken E, & Vandereycken W (1989) Parent counselling: from guidance to treatment. In W, Vandereycken, E Kog, J Vanderlinden (Eds.) *The Family Approach to Eating Disorders. Assessment and treatment of Anorexia Nervosa and Bulimia*. New York: PMA Publishing Corp.

Pilgrim D (2000) The real problem for postmodernism. *Journal of Family Therapy*, 22, 6-23.

Pike KM (1988) Long-term course of anorexia nervosa: response, relapse, remission, and recovery. *Clinical Psychology Review*, 18, 447-475.

Pocock D (1995) Searching for a better story: harnessing modern and postmodern positions in family therapy. *Journal of Family Therapy*, 17, 149-173.

Prochaska JO & DiClemente CC (1982) Transtheoretical therapy: toward a more integrative model of change. *Psychotherapy: Theory Research and Practice*, 19, 276-288.

Prochaska JO, Velicre WF, DiClemente CC & Fava J (1988) Measuring processes of change: applications to the cessation of smoking. *Journal of Consulting and Clinical Psychology*, 565, 520-528.

Rachman S & Hodgson RJ (1980) *Obsessions and Compulsions*. Englewood Cliffs, NJ: Prentice-Hall.

Rastam M, Gillberg IC & Gillberg C (1995) Anorexia nervosa 6 years after onset. Part II. Comorbid psychiatric problems. *Comprehensive Psychiatry*, 36, 70-76.

Ratnasuriya RH, Eisler I, Szumukler GI & Russell GFM (1991) Anorexia nervosa: Outcome and prognostic factors after 20 years. *British Journal of Psychiatry*, 158, 495-502

Robin AL, Siegel PT, Koepke T, Moye AW & Tice S (1994) Family therapy versus individual therapy for adolescent females with anorexia nervosa. *Developmental and Behavioral Pediatrics*, 15, 111-116

Robin AL, Siegel PT, Moye AW (1995) Family versus individual therapy for anorexia: Impact on family conflict. *International Journal of Eating Disorders*, 17, 313-322.

Robin AL, Siegel PT, Moye AW, Gilroy M, Dennis AB & Sikand A (1999) A controlled comparison of family versus individual therapy for adolescents with anorexia nervosa. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 1482-1489.

Rosenberg (1965) *Society and the Adolescent Self Image*. Princeton, NJ: Princeton University Press.

Rosman BL, Minuchin S & Liebman R (1975) Family lunch session: An introduction to family therapy in anorexia nervosa. *American Journal of Orthopsychiatry*, 45, 846-853.

Russell GFM (1970) Anorexia nervosa: Its identity as an illness and its treatment. In JH Price (Ed.) *Modern Trends in Psychological Medicine* 2. New York: Appleton-Century-Crofts.

Russell GFM, Dare C, Eisler I & Le Grange PDF (1992) Controlled trials of family treatments in anorexia nervosa. In K Halmi (Ed.) *The Psychobiology of Eating Disorders*. Washington, DC: American Psychiatric Press.

Russell GFM, Szmulker GI, Dare C & Eisler I (1987) An evaluation of family therapy in anorexia nervosa and bulimia nervosa. *Archives of General Psychiatry*, 44, 1047-1056.

Rutter M & Brown GW (1966). The reliability and validity of measures of family life and relationships in families containing a psychiatric patient. *Social Psychiatry*, 1, 38-53.

Sargent J, Liebman R & Silver M (1985) Family therapy for anorexia nervosa. In: DM Garner & PE Garfinkel (Eds.) *Handbook of Psychotherapy for Anorexia Nervosa and Bulimia*. New York: Guilford Press.

Schmidt U, Tiller J & Treasure J (1993) Setting the scene for eating disorders: childhood care, classification and cause of illness. *Psychological Medicine*, 23, 663-672.

Schwartz CE, Dorer DJ, Beardslee WR, Lavori PW & Keller MB (1990) Maternal expressed emotion and parental affective disorder: risk for childhood depressive disorder, substance abuse, or conduct disorder. *Journal of Psychiatric Research*, 24, 231-250.

Selvini-Palazzoli M (1974) *Self starvation: From the Intrapsychic to the Transpersonal Approach to Anorexia Nervosa*. London: Chaucer Publishing.

Selvini-Palazzoli M (1985) Anorexia nervosa: A syndrome of the affluent society. *Journal of Strategic and Systemic Therapies*, 4, 12-16.

Selvini-Palazzoli M, Boscolo, L, Cechin G & Prata G (1978) *Paradox and Counterparadox*. New York: Jason Aronson.

Selvini-Palazzoli M, Boscolo, L, Cechin G, & Prata G (1980) Hypothesising-circularity-neutrality: Three guidelines for the conductor of the session. *Family Process*, 19, 3-12.

Selvini-Palazzoli M & Viaro M (1988) The anorectic process in the family: a six-stage model as a guide for individual therapy. *Family Process*, 27, 129-148.

Serfaty MA, Turkington D, Heap M, Ledsham L & Jolley E.(1999) Cognitive therapy versus dietary counselling in the outpatient treatment of anorexia nervosa: effects of the treatment phase. *European Eating Disorders Review*, 7, 334-350.

Sharp CW & Freeman CP (1993) The medical complications of anorexia nervosa. *British Journal of Psychiatry*, 162, 452-462.

Shoebridge P & Gowers SG (2000) Parental high concern and adolescent-onset anorexia nervosa. A case-control study to investigate direction of causality. *British Journal of Psychiatry*, 176, 132-137.

Shugar G & Krueger S (1995) Aggressive family communication, weight gain, and improved eating attitudes during systemic family therapy for anorexia nervosa. *International Journal of Eating Disorders*, 17, 23-31.

Smyth BP, Shore A, & Gowers SG (2000) Motivation to change and initial treatment response in adolescents with anorexia nervosa. Poster presentation at the Faculty of Child and Adolescents Psychiatry Annual Residential Meeting, The Royal College of Psychiatrists, 18-20 September 2000.

Steiner H, Mazer C & Litt IF (1990) Compliance and outcome in anorexia nervosa. *The Western Journal of Medicine*, 153, 133-139.

Steinhausen H-C (1994) Anorexia and bulimia nervosa. In: M Rutter, E Taylor & L Hersov (Eds.) *Child and Adolescent Psychiatry. Modern Approaches*. 3rd Edition. Oxford: Blackwell Scientific Publications.

Steinhausen H-C (1997) Annotation: Outcome of anorexia nervosa in the younger patient. *Journal of Child Psychology and Psychiatry*, 38, 271-276.

Steinhausen H-C (1999) Eating disorders. In: H-C Steinhausen & F Verhulst (Eds.) *Risks and Outcomes in Developmental Psychopathology*. Oxford: Oxford University Press.

Steinhausen H-C, Rauss-Mason C & Seidel R (1991) Follow-up studies of anorexia nervosa: A review of four decades of outcome research. *Psychological Medicine*, 21, 447-496.

Stierlin H (1981) *Separating Parents and Adolescents*. 2nd Edition. New York: J Aranson.

Stierlin H & Weber G (1987) Anorexia nervosa: Family dynamics and family therapy. In: PJV Beumont, GD Burrows & RC Casper (Eds.) *Handbook of Eating Disorders. Part 1*. Amsterdam: Elsevier-Science.

Stierlin H & Weber G (1989) Anorexia nervosa: lessons from a follow-up study. *Family Systems Medicine*, 7, 120-157.

Striegel-Moore RH (1993) Etiology of binge eating: a developmental perspective. In: CG Fairburn & T Wilson (Eds.) *Binge Eating. Nature, Assessment, and Treatment*. New York & London: Guilford Press.

Strober M, Freeman R & Morrell W (1997) The long-term course of severe anorexia nervosa in adolescents: survival analysis of recovery, relapse, and outcome predictors over 10-15 years in a prospective study. *International Journal of Eating Disorders*, 22, 339-360

Strober M, & Humphrey (1987) Familial contributions to the etiology and course of anorexia nervosa and bulimia. *Journal of Consulting and Clinical Psychology*, 55, 654-659.

Szmukler, G.I., Berkowitz, R., Eisler, I., Leff, J. & Dare, C. (1987). Expressed emotion in individual and family settings: A comparative study. *British Journal of Psychiatry*, 151, 174-178.

Szmukler GI, Eisler I, Russell GFM & Dare C (1985) Parental "Expressed Emotion", anorexia nervosa and dropping out of treatment. *British Journal of Psychiatry*, 147, 265-271.

Tanner JM & Whitehouse RH (1986) *Growth and Development. A Book of Reference Charts. Tanner-Whitehouse Standards*. Herts: Castlemead Publications.

Thom K (1988) Interventive interviewing. *Family Process*, 27, 1-15.

Touyz SW & Beumont PJV (1997): Behavioral treatment to promote weight gain in anorexia nervosa. In: DM Garner & PE Garfinkel (Eds) *Handbook of Treatment for Anorexia nervosa and Bulimia nervosa*. 2nd Ed., New York: Guilford.

Treasure J, Todd G, Brolly M, Tiller J, Nehmed A & Denman F (1995) A pilot study of a randomised trial of cognitive analytical therapy vs educational behavioural therapy for adult anorexia nervosa. *Behaviour Research and Therapy*, 33, 363-367.

Turk J (1993) Cognitive approaches. In: B Lask & R Bryant Waugh (Eds.) *Childhood Onset Anorexia Nervosa and Related Eating Disorders*. Hove, U.K.: Lawrence Erlbaum Associates.

Vandereycken W (1995) The place of family therapy in the treatment of eating disorders. In: H-C Steinhausen (Ed) *Eating Disorders in Adolescence. Anorexia and Bulimia Nervosa*. Berlin & New York: Walter de Gruyter.

Vandereycken W, Kog E, Vanderlinden J (1989) *The Family Approach to Eating Disorders. Assessment and treatment of Anorexia Nervosa and Bulimia*. New York: PMA Publishing Corp.

Vandereycken W & Pierloot (1983) Drop-out during inpatient treatment of anorexia nervosa: a clinical study of 133 patients. *British Journal of Medical Psychology*, 56, 145-156.

Vandereycken W & Van Deth R (1994) *From Fasting Saints to Anorexic Girls. The History of Self-Starvation*. London: The Athlone Press.

Vanderlinden J, Perednia C, & Vandereycken W (1989) The family therapist faced with chronic cases, broken-home situations, and transgenerational issues. In W, Vandereycken, E Kog, J Vanderlinden (Eds.) *The Family Approach to Eating Disorders. Assessment and treatment of Anorexia Nervosa and Bulimia*. New York: PMA Publishing Corp.

Vanderlinden J & Vandereycken W (1989) Overview of the family therapy literature. In W, Vandereycken, E Kog, J Vanderlinden (Eds.) *The Family Approach to Eating Disorders. Assessment and treatment of Anorexia Nervosa and Bulimia*. New York: PMA Publishing Corp.

Van Furth, E.F., Van Strien D.C., Martina L.M.L., Van Son M.J.M., Hendrickx J.J.P., Van Engeland H. (1996) Expressed emotion and the prediction of outcome in adolescent eating disorders. *International Journal of Eating Disorders*, 20, 19-31.

Van Furth, E.F., Van Strien, D.C., Van Son, M.J.M. & Van Engeland H. (1993). The validity of the five-minute speech sample as an index of expressed emotion in parents of eating disorder patients. *Journal of Child Psychology and Psychiatry*, 34, 1253-1260.

Vaughn CE & Leff J (1976a). The measurement of expressed emotion in the families of psychiatric patients. *British Journal of Social and Clinical Psychology*, 15, 157-165.

Vaughn CE & Leff J (1976b) The influence of family and social factors on the course of psychiatric illness: a comparison of schizophrenic and depressed neurotic patients. *British Journal of Psychiatry*, 129, 125-127.

Viaro M (1990) Session-Intersession sequences in the treatment of chronic anorexic-bulimic patients: following the model of family games. *Family Process*, 29, 289-296.

Von Bertalanffy L (1968) *General Systems Theory: Foundations, Development, Application*. New York: Braziller.

Vostanis P., Burnham J. & Harris, Q. (1992) Changes of expressed emotion in systemic family therapy. *Journal of Family Therapy*, 14, 15-27.

Vostanis, P., Nicholls, J. & Harrington, R. (1994) Maternal expressed emotion in conduct and emotional disorders of childhood. *Journal of Child Psychology and Psychiatry*, 35, 365-376.

Ward A, Troop N, Todd G & Treasure JL (1995) To change or not to change-How is the question? *British Journal of Medical Psychology*, 69, 139-146.

Watzlawick P, Weakland J, & Fisch R (1967) *The Pragmatics of Human Communication*. New York: Norton.

Whitaker A, Davies M, Shaffer D, Johnson J, Abrams S, Walsh BT & Kalikow K (1989) The struggle to be thin: a survey of anorexic and bulimic symptoms in a non-referred adolescent population. *Psychological Medicine*, 19, 143-163

White M (1983) Anorexia nervosa: A transgenerational system perspective. *Family Process*, 22, 25-273.

Wonderlich SA (1995) Personality and eating disorders. In: KD Brownell & CG Fairburn (Eds.) *Eating Disorders and Obesity. A Comprehensive Handbook*. New York & London: The Guilford Press.

Wood A, Kroll L, Moore A & Harrington R (1995) Properties of the mood and feelings questionnaire in adolescent psychiatric outpatients: a research note. *Journal of Child Psychology and Psychiatry*, 36, 327-334.

World Health Organisation (1992) *ICD 10 Classification of Mental and Behavioural Disorders*. Geneva: WHO.

Wynne LC (1988) *The State of the Art in Family Therapy Research*. New York: Family Process Press.

Appendix 1

THE ASSESSMENT OF EXPRESSED EMOTION IN A STANDARDISED FAMILY INTERVIEW

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Abstract

This study compared the expressed emotion (EE) scores obtained using individual interviews with parents with the scores obtained in whole family interviews. Interviews were carried out with 31 parents of 16 adolescents referred because of an eating disorder. There was moderate correlation of scores between the two interviews regarding critical comments, emotional overinvolvement and warmth, but it was low for positive remarks. The study suggests that the whole family interview, which is time saving, is useful in assessing EE. The levels of EE, particularly the relatively low levels of critical comments and emotional overinvolvement, are similar to those of previous studies.

Keywords: expressed emotion; eating disorders; family interview; individual interview

There is a vast amount of evidence that the quality of family relationships are closely related to the development, maintenance and treatment response of many psychiatric and physical disorders (e.g. Bloch, Haffner, Harari, & Szmukler 1994). In order to investigate these processes it has been necessary to develop measures of family life. Expressed emotion (EE) has become an important index of these relationships that can be measured reliably and has validity. Numerous studies have indicated its relevance for understanding psychiatric disorders in childhood (Hibbs et al., 1991; Asarnow, Tompson, Hamilton, Goldstein & Guthrie 1994), for physical disorders (Fishman-Havstad & Marston, 1984; Hermans, Florin, Dietrich, Rieger & Hahlweg 1987), and for many psychiatric disorders that occur in adolescence and adulthood such as eating disorders (Hodes and Le Grange, 1993), depression (Hooley and Teasdale, 1989), and preeminantly for schizophrenia (Leff and Vaughn, 1985; Kuipers and Bebbington, 1988; Kavanagh, 1992) In view of this, the measurement of EE has become a subject of considerable interest in its own right (Kazarian, 1992).

The pioneers in EE (Brown, Carstairs & Topping 1958; Brown, Birley & Wing, 1972) were investigating aspects of family life associated with relapse in schizophrenia. This required the development of measures of family relationships. The research involved interviews with married couples with children, one of whom was a neurotic/depressed patient (Brown and Rutter, 1966; Rutter and Brown, 1966). Long interviews were carried out with the relatives of patients, lasting about two to four hours, which were audio recorded using a semistructured interview called the Camberwell Family Interview (CFI). This inquired into many aspects of family life, including desired and undesired behaviours shown by the patient. The interview was rated along five dimensions, criticism, hostility, emotional overinvolvement, warmth and positive remarks (Brown et al, 1972). The first and last of these were scored on frequency scores, the others use global scores, ranging from zero to five (Brown et al, 1972; Leff and Vaughn, 1985). Although the interview proved to be useful in assessing aspects of family life associate with schizophrenic relapse, its length made it cumbersome even in research settings. The interview was shortened, so it would usually last less than two hours, without loss of reliability (Vaughn and Leff, 1976a).

As interest in assessing aspects of family relationships increased so the need for reducing interviewing time was more apparent. This was achieved with the development of the Five minute speech sample (FMSS), (Magana, Goldstein, Karno, Miklowitz,

Jenkins, & Falloon 1986; Malla, Kazarian, Barnes & Cole 1991). This interview essentially involves asking the relative to talk for five minutes about the index person, and the speech is audio recorded. It is rated for critical comments (CC) and emotional overinvolvement (EOI) using criteria derived from the CFI, applied in systematic ways to the speech sample. The final score is dichotomised into high or low EE. In studies of families with a schizophrenic offspring there is a high degree of correspondence with the CFI when EE is dichotomised into high and low (Magana et al, 1986; Malla et al, 1991). Thus respondents defined as high EE on the FMSS almost always received the same rating on the CFI (15/17) (Magana et al, 1986). However, roughly one third of cases who were rated as low on the FMSS were rated as high on the CFI. Thus the FMSS is less likely to elicit high levels of critical comments and emotional overinvolvement than the CFI (Magana et al, 1986; Malla et al, 1991). However another study from the Netherlands, involving parents with an adolescent suffering from an eating disorder, suggested that the concurrent validity between the CFI and FMSS is low (Van Furth, Van Strien, Van Son & Van Engeland 1993). Nevertheless, the predictive validity of the FMSS has been demonstrated for some childhood disorders. High parental EE using the FMSS have been shown to be strongly associated with persistence of mood disorder in children (Asarnow, Goldstein, Tompson & Guthrie 1993), and it also predicted parental interactional behaviour towards children with attention deficit hyperactivity disorder (Marshall, Longwell, Goldstein & Swanson, 1990). This suggests that the search for short methods of rating EE may be fruitful.

There has been a longstanding interest in assessing the stability of EE in different interview situations. The early research showed that interviewing an adult alone or with the spouse showed considerable stability, with across interview agreement for warmth towards the spouse being 0.68 and for criticism 0.51 (Brown & Rutter, 1966). The influence of the family systems perspective has increased interest in the context of relationships for speech styles (Seywert, 1984). Research has investigated whether speech from individual parents reflects the speech style they would use if their offspring were to be present (Cook, Strachan, Goldstein & Miklowitz 1989). Initial attempts involved assessing parental speech occurring in discussions with the disturbed adolescent or psychotic young adult offspring (Valone, Norton, Goldstein & Doane 1983; Miklowitz, Goldstein, Falloon & Doane 1984). These discussions lasted a short period of time, 10 minutes and were audio-recorded for later rating. Parental speech was scored for benign criticism, harsh criticism, and support, these being comparable to critical comments, hostility and warmth respectively of EE. This measure was called

affective style. It corresponded to the high and low categories of EE using the CFI, especially when the scores of both parents were taken into account (Valone et al, 1983).

The systems perspective has also led investigators to consider whether EE could be assessed from interviews which involve all family members, as this may be regarded as a context that more realistically resembles the one that many patients live in. Szmukler and his colleagues (Szmukler, Berkowitz, Eisler, Leff & Dare, 1987) compared the ratings of EE obtained from a naturalistic research assessment session with families in which a member has an eating disorder, which included a family meal, with the ratings from individual parental interviews using the CFI. The findings were that for CC there was a high correlation overall, 0.80, although they found it was higher for mothers, 0.82, than for fathers, 0.59. For EOI, there was adequate correlation for mothers, 0.47, but it was low for fathers, 0.20. There was a similar finding for warmth, the correlation for mothers being 0.69, but 0.28 for fathers. In this study the focus on problem behaviours in both the CFI and the family meal may have led to similar levels of expressed dissatisfaction, rated in critical comments.

A second approach to whole family interviewing to rate EE has been the use of initial family therapy sessions. This was reported by Berkowitz (1987) and also suggested that it was feasible to rate EE from initial therapy sessions (which lasted about one and a half hours). The sessions involved various kinds of family therapy approaches. The idea of rating of family therapy sessions was taken a step further by Vostanis and colleagues (Vostanis, Burnham & Harris, 1992) who rated sessions during the course of systemic family therapy for 12 families. They showed a reduction in CC and EOI, and increase in warmth during therapy, while hostility was low initially. EE was scored from the speech of all family members, which was added to obtain a family EE score. It was also found that most of the CC, EOI and warmth came from the parents.

These studies of family therapy interviews used for rating EE share an important drawback. The length of the sessions and content of speech may be determined more by the therapist than by the family, and this may affect the ratings. The studies of therapeutic family interviews have involved different types of questions and statements, as they have followed diverse family therapy approaches each of which is associated with its own interviewing style (Israelstam, 1988). This limitation is circumvented by structured or semi-structured interviews of family life. Such a study has been reported

by Le Grange and colleagues (1992), who rated EE from video-recorded interviews using the standardised clinical family interview (SCFI), (Kinston and Loader, 1984). This is a semi-structured interview used for non-labelled families i.e. not containing a referred patient. The interview covers a number of aspects of family life which all family members are encouraged to discuss.

Important advantages of these approaches are that they are economical in time. From one interview speech can be rated from both parents and other family members. Furthermore, such approaches can also help to bridge the therapy - research divide by showing how responses to clinically relevant questions can be linked to research findings.

However these studies of family interviews for rating EE have left unresolved a number of issues. Firstly, there is a lack of clarity about how the rules for rating EE, initially developed for individual interviews are being applied. For example, it is unclear how direct speech from parent to child should be scored. Secondly in these studies, like those that report on the rating of EE using the CFI concerning parental attitudes to children, it is unclear how much adaptation of the rules is needed to take into account the different ages, psychosocial development and social circumstances of offspring. This would seem to be a particular problem for rating EOI, specifically overprotectiveness. For example it is hard to know how to rate taking children to school and collecting them without a lot of contextual information, whereas adults usually travel to work independently, and a parent who takes them may well be properly rated as overinvolved.

The aims of this study were firstly to compare the rating EE from parents to their children in whole family semi-structured interviews with the rating using the CFI. Secondly, the rating of family interviews were to be used to develop rules for rating EE in that context. Thirdly, both family interviews and individual interviews were studied with a view to elucidating difficulties in rating EE towards children, especially when they suffered from anorexia nervosa, a life-threatening illness.

METHODS

Sample

The subjects of this study were parents and families referred to the Maudsley Hospital Adolescent Eating Disorder Service. Referral was made because of the presence of an

eating disorder in an adolescent family member, aged 11-17 years. The sample was drawn from 57 consecutive referrals of adolescents with anorexia nervosa or bulimia nervosa made between 1988-1991. These patients were fully assessed with a view to the provision of treatment. Ten of these subjects suffered from bulimia nervosa, and details concerning these patients are available elsewhere (Dodge, Hodes, Dare & Eisler, 1995). The largest group, 47, had anorexia nervosa, and most of these patients entered a treatment trial involving ongoing assessment (paper, in preparation). Parents and families included in this study were 16 families assessed consecutively, soon after the start of the treatment study, and with whom it was possible to carry out both individual and family assessments of EE.

All but one of the 16 adolescents were female, and the mean age was 15.4 (SD 1.76) years. Fourteen of the group had anorexia nervosa, and 2 bulimia nervosa (WHO, 1992). The mean illness duration was 13.7 months (SD 8.5). Thirteen of the families were from social class 1 and 2 according to the Hollingshead Classification System, and 3 from manual and clerical backgrounds, Hollingshead 4-7, based on father's occupation, or that of the head of the household (Hollingshead and Redlich, 1958). Thirteen of the families were intact nuclear families, one adolescent was adopted in infancy and seen with the adoptive family, and two families were single parent families in which the household was headed by the mother.

Assessment

Parents, with the adolescent suffering from the eating disorder and other family members living at home, were asked to attend the Maudsley Hospital Adolescent Eating Disorder Service for an assessment. Assessment of the adolescents and families for entry to the treatment trials involved physical, psychiatric and family evaluation, including the measurement of EE from the whole family interview, and were carried out by MH. For the 16 families reported here, EE was rated using two kinds of interview.

Firstly the standardized clinical family interview was carried out (Kinston and Loader 1984). Significant features of this interview are that all family members are encouraged to respond to questions, for which prompts may be used. The interviewer adopts a neutral style, similar to that used with the CFI. The questions in the SCFI concern a number of areas of family life listed in table 1, and are not specifically problem areas.

Table 1

**Camberwell Family Interview and Standardized Clinical Family Interview
Compared - main topics of inquiry only.**

CFI (individual interview)	SCFI (family interview)
A Basic information - Time budget B History of the problem C Arguments D Other behaviour problems E Informants attitude to the problem F Informants relationship with the patient G Summing up	Introduction What sort of family Who does what with whom Who is like whom Life cycle Roles and responsibilities Conflicts Decisions Discipline Relation to the environment

The family interviews usually took 45-60 minutes to carry out, and were video-recorded for rating subsequently. The ratings for parental EE were carried out initially by MH, long before the CFI was rated. After the initial rating by MH, the family interviews were rated again by ED.

The CFI was the abbreviated form (Vaughn and Leff, 1976b), carried out by MH with parents individually and audio-recorded, for rating according to the rules set down by Leff and Vaughn (1985). The CFI audio-tapes were rated for EE by ED.

Comparison of the two interviews, table 1, reveals that the CFI is more problem oriented than the SCFI. It might be expected that in this study population the levels of CC not concerned with the eating disorder would show higher correlation between the two interviews, than the correlation regarding symptomatic, eating related behaviours. All critical comments were categorised according to whether they were about problem behaviours, i.e. eating disorder symptoms, or other aspects of the adolescent's behaviour.

Rating of EE in the Family Interview

The rating of EE in the family interview was based on the criteria developed by earlier researchers in this field and clearly described by Leff and Vaughn (1985). During this process, it was possible to formalise and agree on new rules required for rating EE in family interviews. Difficulties in rating parental EE, and obtaining consensus scores, due to the adolescents' age and the significance of their disorder were recorded. Discrepancies in the ratings between MH and ED were dealt with by reviewing the interview to obtain a consensus score. The consensus score was used for comparing the ratings between the CFI and the SCFI.

There were three areas in which difficulties arose, and new rules had to be developed. Firstly, direct speech to the adolescent with the eating disorder needed to be rated. It was decided to rate this according to the rules described for the individual interview. This follows the suggestion from a previous study by Szmukler and colleagues (1987). The family interviews included interchanges that led to arguments. In these situations rating of critical comments followed the established rule that only one was scored if the critical comments from the parent was about the same topic. The rules for rating hostility, emotional overinvolvement and warmth, being global scores were easily followed in direct speech, even when the interchange was affectively loaded.

The second area of difficulty, also mostly apparent in relation to the expression of critical comments, concerned situations in which two parents contributed to that critical comment. In a situation where the first parent makes a critical comment, the other parent may express agreement, or even expand on the comment in a way that could not be rated as a critical comment itself. However, taking into account the overall meaning of the second parent's speech, it was decided to rate this as a critical comment. Justification for this comes from observing the adolescents response to such interchanges, and it appeared that they regarded them as expressions of disapproval.

A similar difficulty could arise if one family member introduces information about the parent's way of relating to the patient, as it may be unclear whether this should be taken into account in the rating or not. For example, in one family interview the patient's brother described parental rules about bed-time for the patient, which might have suggested an overprotective and overinvolved parental style. In this incident the parent concerned made no comment. It was decided not to rate such reports of parental behaviour, but only parental behaviours and speech expressed by them.

Rating Expressed Emotion To Children

In previous reports there is little discussion, with rare exceptions (Sensky, Stevenson, Magrill & Petty, 1991), about the difficulties in rating EE towards children and modifications of the rules for this age group (Hibbs et al 1991; Asarnow et al 1993, 1994; Stubbe, Zahner, Goldstein & Leckman 1993; Vostanis, Nicholls, & Harrington 1994). For a number of areas in the interviews reported here children's developmental needs, typically in relation to dependency, affected the rating of overinvolvement. The other dimensions of EE could be rated easily regardless of the children's age and dependency needs.

EOI is identified by melodramatic speech and intense affective expression in the interview e.g. crying, an account with excessive detail, overprotectiveness and self-sacrificing behaviour. The first of these could usually be rated without much difficulty. However the need to take into account the adolescents' physical state could affect the rating for affective expression in the interview. Occasionally it was difficult to balance what would be "normal" parental anxiety and distress with a specified amount of weight loss. This could be complicated by the fact that body size and physical maturation need to be taken into account in estimating the significance of starvation. In order to deal with this, greater emphasis was given to the levels of parental preoccupation with their offspring's health, rather than expressed concern which might lead to parental behaviour change e.g. watching carefully how much was being eaten.

Overprotectiveness was sometimes difficult to rate because of the need to take into account family and cultural diversity. The most frequent example of this was whether parents let their children travel alone. For North European adults, age and culturally appropriate independence would include travel alone. For children a lot of contextual information is required to assess parental attitudes to whether or not they let their children travel alone. This needs to include factors such as the child's age, general coping, severity of illness, whether the family is living in an urban or rural area, local dangers from roads etc. It is striking that there are historical, inter-generational changes for this. For example, many parents reported that they used to travel to school alone, but they would not permit their children to do so because of the dangers, typically from roads. This is the same time period since training in rating EE has become well established, and yet training to establish inter-rater reliability still relies on the use of the original audio-recordings of the CFI made from interviews carried out years ago. In view

of this, the approach adopted here is to be very cautious in rating overprotectiveness to children with respect to dangers outside the home, which appeared to be shared by all parents, although to varying degrees.

Self-sacrificing behaviour was also sometimes difficult to rate. In a number of interviews, parents made apparently self-sacrificing comments towards their teenage children. These typically concerned parents who said they would put their children first, and sometimes made explicit that parenting would be put before spouse demands. In one family the mother said she would rather do the housework than let her children do it because of the demands of homework. In another family the mother indicated that the child's needs were put before those of the husband for example in providing his meals. Such attitudes are highly culture bound, and reflect culturally normative views about family organisation and intergenerational processes (Jenkins and Karno, 1992). It is perhaps for this reason that a high reliability in the rating of EOI in culturally diverse settings is hard to achieve (Wig et al, 1987). In view of this it was decided to give low significance to the kinds of expressed self-sacrificing behaviour described above.

Data Analysis

Correlation used by Spearman's rho for comparison of the scores between the two interviews. In view of the nature of the scales and non-normal distribution of the scores the differences between scores was analyzed using Wilcoxon signed ranks test. Inter-rater agreement was analysed using an ANOVA intraclass correlation coefficient (Bartko and Carpenter, 1976).

RESULTS

Inter-rater Reliability for Family Interview (SCFI)

Inter-rater agreement (MH and ED) regarding the Standardized Clinical Family Interview gave the following intra-class correlation coefficients: for maternal EE critical comments 0.83, hostility 1.0, emotional overinvolvement 0.05, warmth 0.66, and positive remarks 0.84; for paternal EE critical comments 0.67, hostility 0.3, emotional overinvolvement 0.44, warmth 0.54, and positive remarks 0.78; considering parents together, critical comments 0.76, hostility 0.71, emotional overinvolvement 0.30, warmth 0.67, and positive remarks 0.80.

Individual (CFI) and Family Interviews (SCFI) Compared

In view of the infrequency of hostility, the correlations between the two kinds of interview for this dimension of EE have been omitted.

Critical Comments

As can be seen from table 2, taking all fathers and mothers together, there was moderate correlation, 0.531, between the individual and the family interviews.

TABLE 2

**Comparison of Individual (CFI) and Family (SCFI) Ratings of Expressed Emotion.
All parents - mothers and fathers combined.**

All Parents (n=31)	CFI mean (S.D.) range	SCFI mean (S.D.) range	Correlation Spearman's rho	Significance of correlation (p value 2-tailed)	Difference between CFI and SCFI Wilcoxon
Critical Comments	3.32 (2.64) 0-9	2.42 (2.46) 0-9	0.531	0.002	0.035
EOI	1.06 (1.03) 0-4	1.00 (0.97) 0-3	0.451	0.011	0.532
Warmth	3.19 (0.91) 1-5	2.55 (1.34) 0-4	0.508	0.004	0.006
Positive Remarks	1.97 (1.64) 0-7	1.06 (0.98) 0-4	0.255	0.255	0.008

Key: Wilcoxon - Wilcoxon signed ranks test

When mothers' scores were considered alone, there is a similar correlation 0.548, but it was higher for the fathers, 0.67 (see table 3).

Table 3

Comparison of Individual (CFI) and Family (SCFI) Ratings of Maternal Expressed Emotion.

Mothers (n=16)	CFI mean (S.D.) range	SCFI mean (S.D.) range	Correlation Spearman's rho	Significance of correlation (p value 2-tailed)	Difference between CFI and SCFI Wilcoxon
Critical Comments	3.12 (2.75) 0-9	2.44 (2.50) 0-9	0.548	0.028	0.194
EOI	1.56 (1.09) 0-4	1.12 (0.88) 0-3	0.294	0.270	0.142
Warmth	3.31 (1.01) 1-5	2.87 (1.26) 1-4	0.473	0.064	0.169
Positive Remarks	2.19 (1.83) 0-7	1.19 (1.11) 0-4	0.370	0.158	0.041

Key: Wilcoxon - Wilcoxon signed ranks test

The scores for fathers are available in Table 4.

Table 4
Comparison of Individual (CFI) and Family (SCFI) Ratings of Paternal Expressed Emotion.

Fathers (n=15)	CFI mean (S.D.) range	SCFI mean (S.D.) range	Correlation Spearman's rho	Significance of correlation (p value 2-tailed)	Difference between CFI and SCFI Wilcoxon
Critical Comments	3.53 (2.59) 0-9	2.53 (2.74) 0-8	0.67	0.006	0.096
EOI	0.53 (0.64) 0-2	0.73 (0.96) 0-3	0.48	0.07	0.366
Warmth	3.07 (0.8) 2-4	2.13 (1.35) 0-4	0.52	0.048	0.017
Positive Remarks	1.73 (1.44) 0-4	1.00 (1.07) 0-3	0.23	0.405	0.405

Key: Wilcoxon - Wilcoxon signed ranks test

When all 31 parents are considered together, the CFI does elicit more critical comments (p=0.035).

Further investigation of the content of these critical comments, when divided according to whether or not the CC concerned the eating disorder, (see table 5) was striking.

Table 5
Comparison of Individual (CFI) and family (SCFI) Ratings of
critical comments, concerning behaviours related to the eating
disorder or other behaviours.

All parents (n=31)	CFI mean (S.D.) range	SCFI mean (S.D.) range	Correlation Spearman's rho	Significance of correlation p value (2-tailed)	Difference between CFI and SCFI Wilcoxon
CC - eating disorder	1.581 (1.91) 0-8	1.06 (1.31) 0-4	0.275	0.134	0.215
CC - non eating disorder	1.55 (1.98) 0-8	1.58 (1.82) 0-6	0.471	0.008	0.608
Mothers (n=16)					
CC - eating disorder	1.81 (1.90) 0-7	1.00 (1.31) 0-5	0.186	0.489	0.156
CC - non eating disorder	1.37 (2.09) 0-8	1.44 (1.36) 0-4	0.568	0.022	0.430
Fathers (n=15)					
CC - eating disorder	1.80 (1.74) 0-6	0.67 (1.17) 0-4	0.130	0.645	0.050
CC - non eating disorder	1.73 (2.25) 0-6	1.73 (2.25) 0-6	0.488	0.065	0.964

Key: Wilcoxon - Wilcoxon signed ranks test

There was no significant correlation between the CC in the two kinds of interview when criticism of symptomatic behaviours was considered, but correlation of CC for non-symptomatic areas was moderately strong, 0.471. When mothers' and fathers' scores were examined separately, correlation was similar regarding non-symptomatic areas between the two interviews.

Mothers did not make significantly different numbers of symptomatic or non-symptomatic CC in the two interviews. On the other hand, fathers were more critical about the adolescent in relation to eating disorder symptoms in the individual interview than in the family interview ($p=0.050$).

There were no significant correlations for CC between the parents in the CFI (r_s 0.128) or the SCFI (r_s 0.137). When mothers and fathers are compared, the levels of CC were not significantly different in both individual and family interviews.

Emotional Overinvolvement

Taking all parents together there was moderate correlation of EOI 0.451 between the two interviews. For both mothers and fathers there was no significant difference in the EOI score between the two interviews.

There were low correlations for EOI between the parents in the CFI (r_s 0.397) but moderate correlations during the SCFI (r_s 0.650). In comparing maternal and paternal EOI mothers were found to be significantly more overinvolved than fathers in the CFI ($p = 0.004$), but not in the SCFI.

Warmth

When mothers and fathers were considered together, warmth showed moderate correlation in the two interviews, 0.508. For mothers there was no significant difference between the ratings for warmth in the two interviews, but fathers were significantly warmer in the individual interview than the family interview ($t = -3.11$, $p=0.0077$).

There were low correlations for warmth between the parents in the CFI (r_s 0.195) and also in the SCFI (r_s 0.194). Mothers and fathers showed no significant difference in the expression of warmth in the individual and family interviews.

Positive Remarks

This dimension of EE showed the lowest correlation between the two settings, only 0.255 for both parents, and unlike the other dimensions it was higher for mothers 0.37, as compared to fathers, 0.23. Mothers made significantly fewer positive remarks in the family interview compared with the individual interview ($t=-1.38$, $p=0.037$), and there was a trend in a similar direction for fathers.

There were low correlations for positive remarks between the parents in the CFI (r_s 0.101) and also low correlations during the SCFI (r_s 0.159). When mothers and father were compared for the number of positive remarks there was no difference in the individual and family interview.

DISCUSSION

The study found moderately high correlation for rating CC in individual and family interviews. The correlations for warmth were similar to those for CC, but they were lower for EOI and positive remarks. Overall, mothers and fathers had similar EE ratings in both settings with the exception of overinvolvement, which was scored higher for mothers than fathers in the CFI.

It is striking that although each parent would have spoken for longer in the individual interview than the family interview no significant difference was demonstrated in the level of CC made by the mothers, although fathers were more critical in the individual interview. It has been suggested previously that interview duration is not an important determinant of EE (Vaughn and Leff, 1976; Szmukler et al, 1987). Since the CFI specifically probes for difficult and symptomatic behaviours, it is impressive that the differences were not greater. Evidence that the CFI successfully elicits more symptomatic CC's comes from data summarised in table 5. Possibly because the SCFI does not probe for symptomatic behaviours the correlation for CC is less than in the Szmukler et al (1987) study which compared the CFI with a family meal, and obtained a correlation of 0.80. The meal itself may have served as a context which elicited CC, and critical speech would have been rated if it was to the patient or about her.

Other dimensions of EE had slightly lower correlations than CC. This is perhaps expected in view of the previous study by Szmukler et al (1987) which found a similar trend. In that study the correlation for EOI was only 0.28, so obtaining here a higher correlation is interesting. The correlation for positive remarks is low here but still better

than in the earlier study. Again, it may be that the SCFI relatively facilitates the expression of warmth and positive remarks as compared to the fraught context of a family meal.

The rules for rating EE in the family interview were mostly applied without much difficulty. As far as CC is concerned they would have tended to increase this score in the SCFI e.g. by including direct speech, so it is unlikely that the way they were developed could explain the fact that fewer CC were scored in this interview.

As far as the issue of rating of EE to younger subjects is concerned, this was achieved by only giving a score if the speech style and reported behaviours were unequivocal. For EOI, relatively greater emphasis was given to parents' expressed affect, distress and preoccupation in discussing their youngster. Thus, for adolescent girls a statement that the parent drives the adolescent home from a party, or that a younger adolescent who lived outside London was not allowed to visit the capital city with friends would not increase the score for EOI.

The findings that there was moderate correlation between the key dimensions of EE indicate that this measure of family relationships is not wholly context dependent. Parental critical comments, overinvolvement and warmth are manifest even when parents speak only for a short time. This finding also explains the success of very brief interview measures of EE such as the five minute speech sample (Magana et al, 1986; Malla et al, 1991).

The apparent feasibility of rating EE in the family interview makes family interviewing attractive as a combined clinical research practice. Many of the questions in the SCFI are suitable for clinical interviewing. Furthermore, this interview can be used with families who do not have problems that lead to medical help-seeking. This would be a distinct advantage in research studies where 'normal' comparison families need to be included to understand psychopathology and disturbance. Furthermore, the SCFI may be useful in rating speech from parents to siblings, and indeed between parents. Whole family ratings of this kind would make the interview very much more adaptable than the CFI or five minute speech sample.

One of the most important tests for a new instrument is its predictive validity. EE measured by the CFI has been shown to be associated with later treatment dropout in

eating disorders (Szmukler, Eisler, Russell, & Dare 1985). It has been shown that EE, in particular critical comments, measured by the CFI is a good predictor of treatment response in anorexia nervosa. The mother's critical comments explained 28-34% of the outcome variance of 49 Dutch adolescents with eating disorders who were mostly receiving treatment (Van Furth et al, 1996). Initial EE, specifically falling parental criticism, measured by the SCFI has been shown to be associated with better outcome in family treatment of anorexia nervosa (Le Grange, Eisler, Dare & Hodes 1992). Such studies affirm the predictive utility of EE but do not indicate whether the CFI or SCFI is the best predictor.

It is worth commenting on the levels of EE that were identified. The study of family interaction, including EE, in the field of eating disorders has attracted much interest (Eisler, 1995; Hodes and Le Grange, 1993). Broadly speaking the results reported here are comparable to previous studies of EE in eating disorders. The previous studies have found that the level of CC from parents of eating disorder patients to be much lower than CC from parents of offspring with schizophrenia (Goldstein, 1981; Szmukler et al, 1985, Szmukler et al, 1987; Le Grange et al, 1992; Van Furth et al, 1993). For example, Vaughn and Leff (1976a) using the CFI found the mean score for parental criticism in a sample of people with schizophrenia to be 8.22, compared with the 3.32 found here.

One British study compared parental EE, using the CFI, of primary school age children, mostly boys, who had conduct disorder or emotional disorder with a normal control group (Vostanis et al, 1994). Those with conduct disorder had mothers who made slightly more critical comments, mean 3.6, the emotional disorder group scored 1.1 and the controls 1.8. There were also significant differences in warmth, mean scores 2.5, 3.0, 4.1, and positive remarks, 1.9, 1.8 and 4.3 respectively. The eating disorder findings from this study, mean critical comments 3.12, warmth 3.31 and positive remarks 2.19, based on the CFI, are in the mid range of these three groups. It is striking that the mothers of eating disorder adolescents showed levels of criticism similar to the mothers whose children have conduct disorder, presumably because both groups of children are showing behaviours that elicit parental disapproval.

A further link has been suggested between CC and psychiatric diagnosis in that parents of patients with anorexia nervosa were found to be less critical than those with bulimia nervosa (Szmukler et al, 1985). Szmukler et al (1985) using the CFI, found maternal

CC to have a mean of 5.33 (s.d.4.76), considerably higher than that found here. On the other hand, fathers had a mean score for CC of 2.17 (s.d. 2.09). Explanations for the differences between the two studies are that in the Szmukler et al study the patients were older (mean age 22.8 years) than those here, with a longer illness duration, 47 months, and a greater proportion (one third) of patients having bulimia nervosa. A large study carried out in the Netherlands involving 84 parents of 46 patients with eating disorders, 18 of whom had bulimia nervosa, found a low level of CC, with a mean of 2.24 (s.d. 2.93) (van Furth et al, 1993). The mean age of the patients was 17.1, and mean illness duration was 1.9 years. A previous study carried out by the authors used the SCFI (Le Grange et al, 1992) and involved parents of 18 adolescents with eating disorders, mean age 15.3 years and mean illness duration 13.7 months. This study found a mean parental CC of 1.46 (s.d. 1.92). These findings are rather similar, and consistent with this current study.

Comparison of scores for EOI between studies reveals that it is low, consistent with the findings here. Szmukler et al (1985) found maternal EOI to be 1.30, paternal EOI to be 0.43, and Szmukler et al (1987) found maternal EOI to be 1.05, paternal EOI to be 0.15. Van Furth et al (1993) also using the CFI found combined parental EOI to be 1.41. The only previous study using the SCFI found parental EOI to be 1.39 (Le Grange et al, 1992). These results are fairly similar, and all fall well within the normal range. The work of Minuchin, Rosman, & Baker (1978) is widely quoted as supporting the idea that the so called “psychosomatic family”, characterised by high levels of enmeshment and conflict avoidance, is implicated in the development of anorexia nervosa. Our study raises doubts about this notion and suggests that the concept of the ‘psychosomatic family’ needs to be revised or even abandoned (Dare, Le Grange, Eisler & Rutherford 1994; Eisler, 1995).

There are a number of weaknesses in this current study. Firstly the sample is small, and the representativeness of the sample could be an important limitation. This is particularly relevant as the families were referred from a wide area as the centre provide a national service. In addition, one of the raters, ED, rated the CFI and also participated in obtaining the consensus ratings of the SCFI. It might have been advantageous to use a separate rater for each stage of the study, but resource limitations made this impossible.

In conclusion, this study has demonstrated the feasibility of rating EE in a semi-structured family interview. Such a method would be very economical in interviewing time and time required for rating the tapes. Moderately high correlations have been found between the family interview and the CFI, especially for criticism. Future studies could consider the use of the family interview for other disorders. It would also be important to investigate whether the family interview predicts the course of the eating disorder and treatment response as well as the CFI.

FOOTNOTE

Details regarding the rating of expressed emotion in the standardised family interview, with illustrative case vignettes, are available from the first author.

ACKNOWLEDGEMENTS

Matthew Hodes was supported by the Medical Research Council (UK) during part of this study.

References

- Asarnow, J.R., Goldstein, M.J., Tompson, M. & Guthrie, D. (1993) One-year outcomes of depressive disorders in child psychiatric in-patients: evaluation of the prognostic power of a brief measure of expressed emotion. *Journal of Child Psychology and Psychiatry*, 34, 129-137.
- Asarnow, J.R., Tompson, M., Hamilton, E.B., Goldstein, M.J. & Guthrie, D. (1994) Family-expressed emotion, childhood-onset depression, and childhood-onset schizophrenia spectrum disorders: is expressed emotion a nonspecific correlate of child psychopathology or a specific risk factor for depression? *Journal of Abnormal Child Psychology*, 22, 129-146.
- Bartko J & Carpenter W.T. (1976) On the methods and theory of reliability. *Journal of Nervous and Mental Disease*, 163, 307-317.
- Berkowitz, R. (1987). "Rating expressed emotion from initial family therapy sessions (a pilot study)". *Journal of Family Therapy*, 9, 27-37.
- Bloch, S., Haffner, J., Harari, E. & Szmulker, G. (1994) *The Family in Clinical Psychiatry*. Oxford: Oxford University Press.
- Brown G.W., Birley, J.L.T. & Wing, J.K. (1972) Influence of family life on the course of schizophrenic disorders: a replication. *British Journal of Psychiatry*, 121, 241-258.
- Brown, G.W., Carstairs, G.M., & Topping, G. (1958). "Post hospital adjustment of chronic mental patients". *Lancet*, ii, 685-689.
- Brown, G.W. & Rutter, M. (1966). "The measurement of family activities and relationships: A methodological study". *Human Relations*, 19, 241-263.
- Bruch, H. (1973) *Eating Disorders: Obesity, Anorexia Nervosa and the Person Within*. New York: Basic Books.
- Cook, W.L., Strachan, A.M., Goldstein, M.J. & Miklowitz, D.J. (1989). "Expressed Emotion and reciprocal affective relationships in families of disturbed adolescents". *Family Process*, 28, 337.

Dare, C., Le Grange, D., Eisler, I & Rutherford, J. (1994) Redefining the psychosomatic family: Family process of 26 eating disorder families. *International Journal of Eating Disorders*, 14, 211-226.

Dodge, E., Hodes, M., Dare, C. & Eisler, I. (1995) Family therapy for bulimia nervosa: an exploratory study. *Journal of Family Therapy*, 17, 59-77.

Eisler, I. (1995) Family models of eating disorders. In *Handbook of Eating Disorders: Theory, Treatment and Research*. (ed. G. Szmulker, C. Dare & J. Treasure), pp.155-176. Wiley: Chichester.

Fishman-Havstad, L. & Marston, A.R. (1984). "Weight loss maintenance as an aspect of family emotion and process". *British Journal of Clinical Psychology*, 23, 265-271.

Goldstein, M.J. (1981). "Family factors associated with schizophrenia and anorexia nervosa". *Journal of Youth and Adolescence*, 10, 385-405.

Hermanns, J., Florin, I., Dietrich, M., Rieger, C. & Hahlweg, K. (1989). "Maternal criticism, mother-child interaction, and bronchial asthma". *Journal of Psychosomatic Research*, 33, 469-476.

Hibbs, E.D., Hamburger, S.D., Lenane, M., Rapoport, J.L., Kruesi, M.J.P., Keysor, C.S. & Goldstein, M (1991) Determinants of expressed emotion in families of disturbed and normal children. *Journal of Child Psychology and Psychiatry*, 32, 757-770.

Hodes, M. & Le Grange, D. (1993) Expressed emotion in the investigation of eating disorders: a review. *International Journal of Eating Disorders*, 13, 279-288.

Hollingshead, A.B. & Redlich, P.C. (1958) *Social Class and Mental Illness*. New York: Wiley.

Hooley, J.M. & Teasdale, J.D. (1989) Predictors of relapse in unipolar depressives: expressed emotion, marital distress, and perceived criticism. *Journal of Abnormal Psychology*, 98, 229-235.

Israelstam, (1988) Contrasting four major family therapy paradigms: implications for family therapy training. *Journal of Family Therapy*, 10, 179-196.

- Jenkins, J. & Karno, M. (1992) The meaning of expressed emotion: theoretical issues raised by cross-cultural research. *American Journal of Psychiatry*, 149, 9-21.
- Kavanagh, D.J.(1992) Recent developments in expressed emotion and schizophrenia. *British Journal of Psychiatry*, 160, 601-620.
- Kazarian, S.S. (1992) The measurement of expressed emotion. *Canadian Journal of Psychiatry*, 37, 51-56.
- Kinston, W. & Loader, P. (1984). "Eliciting whole-family interaction with a standardized clinical interview". *Journal of Family Therapy*, 6, 347-363.
- Kuipers, L. & Bebbington, P. ((1988) Expressed emotion research in schizophrenia: theoretical and clinical implications. *Psychological Medicine*, 18, 893-909.
- Leff, J. & Vaughn, C.E. (1985). *Expressed Emotion in Families: Its Significance for Mental Illness*. Guilford Press, Inc.: New York.
- Le Grange, D., Eisler, I., Dare, C. & Hodes, M. (1992). Family criticism and self-starvation: a study of expressed emotion. *Journal of Family Therapy*, 14, 177-192.
- Magana, A.B., Goldstein, M.J., Karno, M., Miklowitz, D.J., Jenkins, J. & Falloon, I.R.H. (1986). "A method for assessing expressed emotion in relatives of psychiatric patients". *Psychiatric Research*, 17, 203-212.
- Malla, A.K., Kazarian, S.S., Barnes, S. & Cole, J.D. (1991) Validation of the five minute speech sample in measuring expressed emotion. *Canadian Journal of Psychiatry*, 36, 297-299.
- Marshall, V.G., Longwell, L., Goldstein, M.J. & Swanson, J.M. (1990) Family factors associated with aggressive symptomatology in boys with attention deficit hyperactivity disorder: a research note. *Journal of Child Psychology and Psychiatry*, 31, 629-636.
- Minuchin, S., Rosman, B.L. & Baker, B.L. (1978). *Psychosomatic Families: Anorexia Nervosa in Context*. Harvard University Press: Cambridge, Mass.

- Miklowitz, D.J., Goldstein, M.J., Falloon, I.R.H. & Doane, J.A. (1984) Interactional correlates of expressed emotion in the families of schizophrenics. *British Journal of Psychiatry*, 144, 482-487.
- Rutter, M. & Brown, G.W. (1966). "The reliability and validity of measures of family life and relationships in families containing a psychiatric patient". *Social Psychiatry*, 1, 38-53.
- Selvini-Palazzoli, M., Boscolo, L., Cechin, G. & Prata, G. (1980). *Paradox and Counterparadox: A New Model in the Therapy of the Family in Schizophrenic Transactions*. Jason Aronson: New York.
- Sensky, T., Stevenson, K., Magrill, L. & Petty, R. (1991) Family expressed emotion in non-psychiatric illness: adaptation of the Camberwell Family Interview to the families of adolescents with diabetes. *International Journal of Methods in Psychiatric Research*, 1, 39-51.
- Seywert, F. (1984) Some critical thoughts on expressed emotion. *Psychopathology*, 17, 233-243.
- Stubbe, D.E., Zahner, G.E.P., Goldstein, M.J. & Leckman, J.F. (1993) Diagnostic specificity of a brief measure of expressed emotion: a community study of children. *Journal of Child Psychology and Psychiatry*, 34, 139-154.
- Szmukler, G.I., Berkowitz, R., Eisler, I., Leff, J. & Dare, C. (1987). "Expressed emotion in individual and family settings: A comparative study". *British Journal of Psychiatry*, 151, 174-178.
- Szmukler, G.I., Eisler, I., Russell, G.F.M. & Dare, C. (1985). "Anorexia nervosa, parental 'expressed emotion' and dropping out of treatment". *British Journal of Psychiatry*, 147, 265-271.
- Valone, K., Norton, J.P., Goldstein, M. & Doane, J. (1983) Parental expressed emotion and affective style in an adolescent sample at risk for schizophrenia spectrum disorders. *Journal of Abnormal Psychology*, 92, 399-407.
- Van Furth, E.F., Van Strien D.C., Martina L.M.L., Van Son M.J.M., Hendrickx J.J.P., Van Engeland H. (1996) Expressed emotion and the prediction of outcome in adolescent eating disorders. *International Journal of Eating Disorders*, 20, 19-31.

Van Furth, E.F., Van Strien, D.C., Van Son, M.J.M. & Van Engeland H. (1993). The validity of the five-minute speech sample as an index of expressed emotion in parents of eating disorder patients. *Journal of Child Psychology and Psychiatry*, 34, 1253-1260.

Vaughn, C.E. & Leff, J. (1976a). "The measurement of expressed emotion in the families of psychiatric patients". *British Journal of Social and Clinical Psychology*, 15, 157-165.

Vaughn, C.E. & Leff, J. (1976b) The influence of family and social factors on the course of psychiatric illness: a comparison of schizophrenic and depressed neurotic patients. *British Journal of Psychiatry*, 129, 125-127.

Vostanis P., Burnham J. & Harris, Q. (1992) Changes of expressed emotion in systemic family therapy. *Journal of Family Therapy*, 14, 15-27.

Vostanis, P., Nicholls, J. & Harrington, R. (1994) Maternal expressed emotion in conduct and emotional disorders of childhood. *Journal of Child Psychology and Psychiatry*, 35, 365-376.

Wig, N., Menon, D.K., Bedi, H., Ghosh, A., Kuipers, L., Leff, J., Korten, A., Day, R., Sartorius, N., Emborg, G. & Jablensky, A. (1987) Expressed emotion and schizophrenia in North India, I, cross-cultural transfer of ratings of relatives' expressed emotion. *British Journal of Psychiatry*, 151, 156-160.

World Health Organisation (1992) *ICD 10 Classification of Mental and Behavioural Disorders*. WHO: Geneva.

Appendix 2

Case vignettes

Case 1: Good Outcome

Child J

An 11 year old pre-pubertal girl referred by her GP.

Background

She had a six month history of increasing concern that she was fat, especially her thighs. She did not want to gain weight or get taller. In view of these attitudes over three months she had adopted an increasingly strict diet, with reduction of high calorie foods. By the time of assessment she was only eating one small meal daily. Other weight controlling strategies included increasing exercise, up to half hour daily to keep her legs slim. Her parents thought she might have lost weight but accurate information about her past weight was not available.

Three months before her concern about her weight began, she had experienced a significant stressor. A boy and his dog had chased her. To get away she had inadvertently run into the road, whereupon a car hit her. Fortunately she was not seriously physically injured, but received bruises and lacerations. She attended the local hospital casualty department but was not detained. However, the accident had a very significant psychological effect. She imagined seeing dogs, and had nightmares of dogs. She was withdrawn and depressed at home. Her sleep increased. When going out she became scared, worrying that she would see dogs, and she would be clingy towards her parents. She could not attend school for two weeks. Many of her fears continued for months, and she could not go out alone until 5 months after the accident. Gradually she improved and lost her fear of dogs. By the time her dieting began, her fears over dogs and going out had ceased.

Other stress factors were imminent change of school. She had also mentioned to her mother concerns about menarche.

Relevant Family History

She lived with her parents, who both had professional occupations. She had two younger siblings who were both well. Relevant aspects of the family history was that

her mother had anorexia nervosa aged 16 years but recovered spontaneously after about one year.

Personal History

She had been born premature, at 32 weeks, and required care in an incubator for the first two weeks of her life. Otherwise her early development was unremarkable. She had attended the same primary school for the previous six years. She made good academic progress. She had a few friends but since her weight loss had shown less interest in friendships, and had become more isolated.

Past Medical/Psychiatric History

She had previously been well.

Personality

She had always been an anxious child, for example worrying if the teachers in school changed.

On Interview and Examination

She appeared a small child who communicated rather anxiously, rarely smiling in the initial interview. She was able to describe the fears of fatness mentioned previously. She also reported subjective sadness, some irritability, and guilt feelings. She still had nightmares of being in a car crash. She had reduced interest in things such as socialising with her friends. These changed behaviours were also reported by her parents, who felt she had not completely returned to normal psychological functioning since the car accident. Her parents appeared concerned about her and actively wanted help. They wanted to know how to get her to eat more, and were keen to attend appointment for treatment sessions.

On examination, she her height was 142 cms , weight of 29.8 kgs, and BMI of 14.8. She was on the 10th centile for height and weight.

Diagnostic Formulation

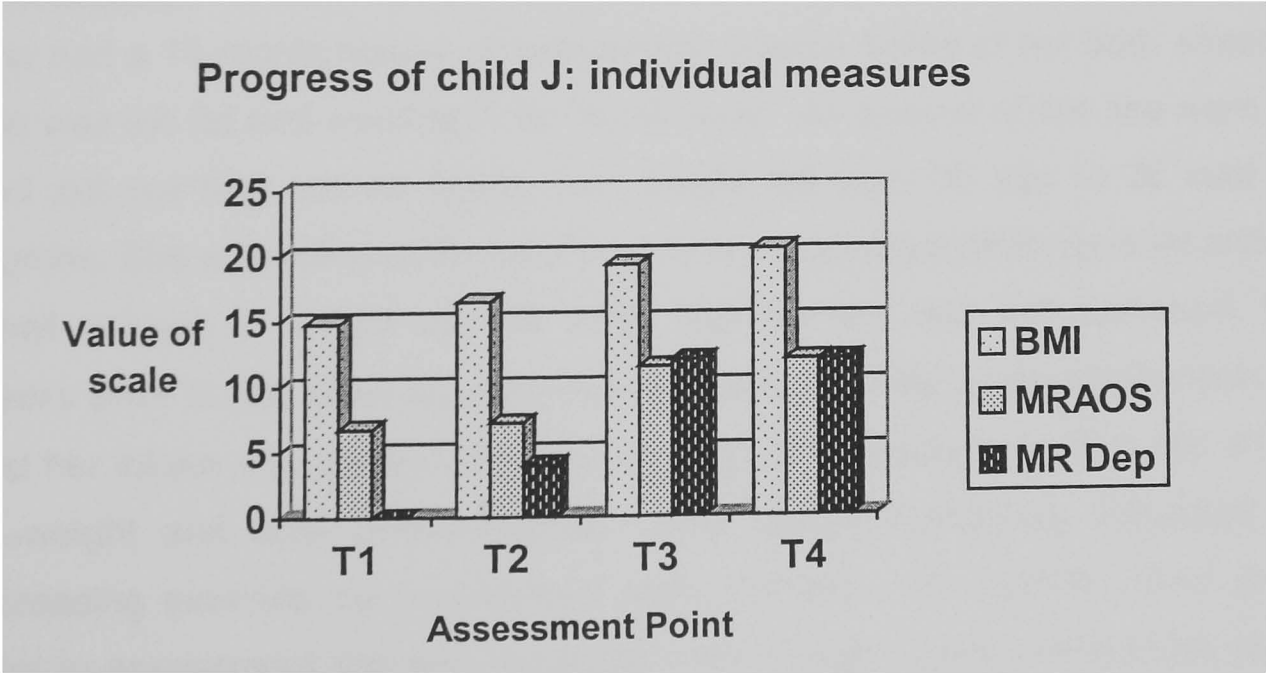
Diagnostically, she had restricting anorexia nervosa, with probable illness duration of three months. She had a recent history of posttraumatic stress disorder from which she had partly recovered, in association with current depressive features. She was predisposed to anorexia nervosa in view of the family history, premature birth, and anxious, high achieving temperament. Recent stressors included the car accident,

and perhaps also the imminent secondary school transfer and menarche. The family appeared harmonious and high functioning. The parents were active help seekers and believed they would have to help their daughter.

Treatment Progress

The family were offered conjoint family therapy and attended the recommended 10 sessions over one year i.e. they were treatment completers. The therapy was regarded as uncomplicated and the family related well to the therapist. The parents were well able to follow advice about the daughter’s dietary needs. They could also explore their daughter’s anxieties and support her so she could gain more confidence. Their daughter made a full recovery from her anorexia nervosa and mood symptoms, achieving good social adjustment (see figure A.1). Family relationships also appeared to have improved, as reflected in changes of parental expressed emotion (see figure A.2) In the final assessment, the parents reported that the treatment had been “excellent”, and that they could not have done without it. Interestingly, they said in a positive way that she had become more independent during the treatment, something that started during the fights over eating, and less compliant, having previously been “over-compliant”.

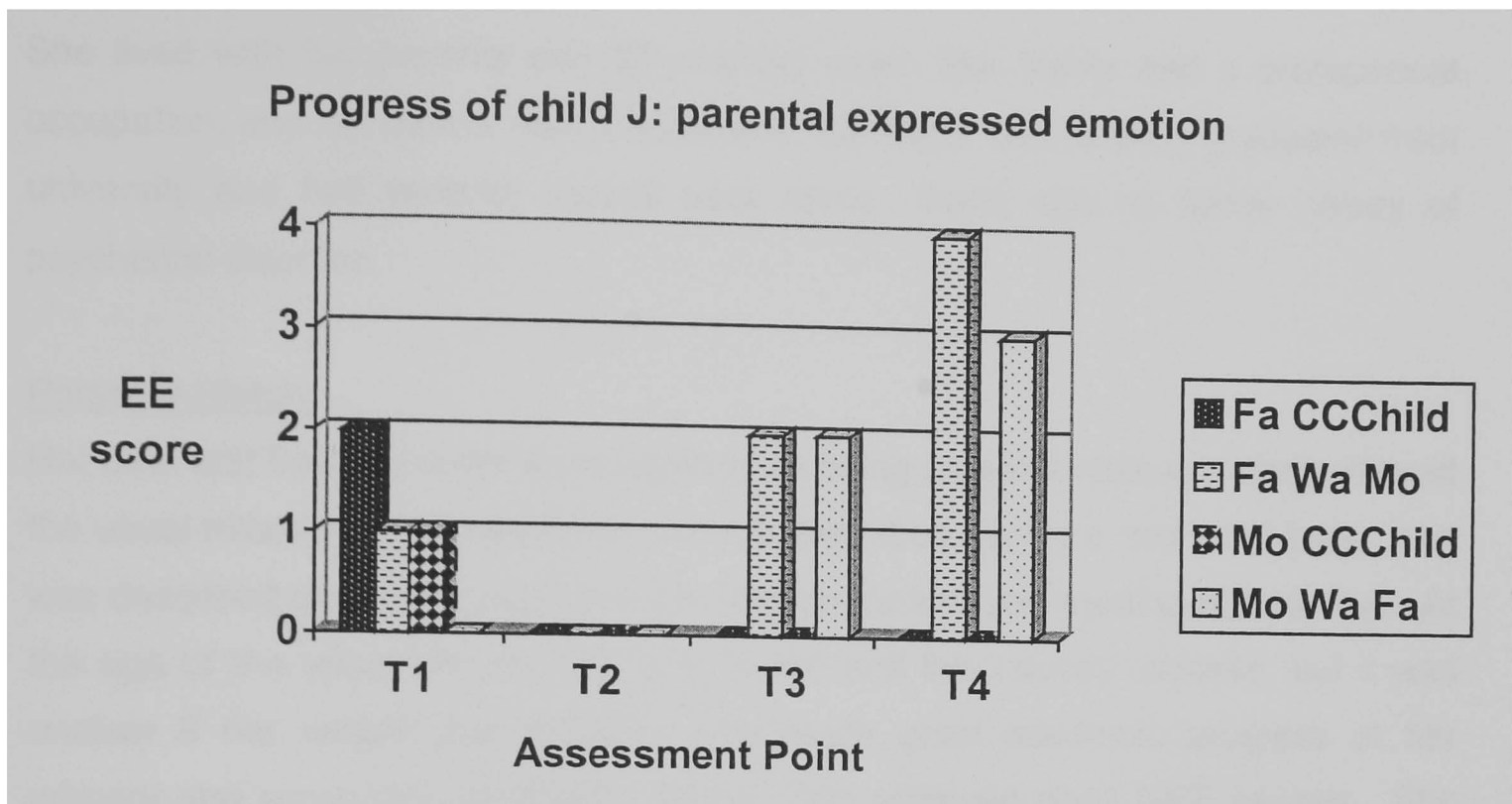
Figure A.1



Key: BMI: Body Mass Index; MRAOS: Moragn Russell Average Outcome Score; MR Dep: Morgan Russell Depression scale

N.B.
Increasing scores indicate return to normal functioning over one year of treatment.
Maximum score, i.e. healthy score for MR scales is 12.

Figure A.2



Key: Fa CCChild: Father's critical comments to child; Fa Wa Mo: Father's warmth to mother; Mo CCChild: Mother's critical comments to child; Mo Wa Fa: Mother's warmth to father

Case 2: Poor Outcome

Child A

A 17 year old post-menarchal female adolescent referred by her GP.

Background

She had a 10-month history of increasingly intense dislike of her body shape, feeling she was too fat and wanting to be "more bony". As a result of this she went on a diet and cut out high calorie foods. Her weight fell from 50 kgs to 36 over about 4 months. She was referred for treatment to her local psychiatric services and put on a small amount of weight but this initial improvement was not sustained. Over the weeks prior to the initial assessment she was only eating two small meals per day, and her intake was estimated to be less than 500 calorie daily. She had a high level of weight and food preoccupation. Other weight controlling strategies included increasing exercise, up to one hour daily. On only one occasion about one month prior to assessment she ate large amounts of high calorie sweet foods (a "binge"), but otherwise there had been no binges or other impulsive behaviour. She had amenorrhoea for 9 months.

Relevant Family History

She lived with her parents and 22-year-old sister. Her father had a professional occupation, and her mother was a housewife. Her sister had recently graduated from university and had recently moved back home. There was no family history of psychiatric disorder.

Personal History

Her birth and first few years were reported as being unremarkable and she achieved the usual milestones. However her parents described her as a “nervous” baby. She was described as always wanting to be with her mother and wanting reassurance. At the age of 3-4 years she did not want to eat and this caused concern, but it was unclear if her weight was affected. She made good academic progress at her primary and secondary (grammar) school. She achieved good GCE passes. She left school at around the time her intense dieting began, as she felt she could not cope with the pressures of her A level course. She always had a small but loyal group of friends but since her weight loss had shown less interest in friendships, and had become more isolated. Regarding her psychosexual development, she reached menarche at the age of 13 years.

Personality

She was described as an anxious and conscientious child. She described herself as a perfectionist, always wanting to be the best.

Past Medical/Psychiatric History

At the age of 10 years she had glandular fever. Her recovery was complicated by the development of panic attacks. These occurred if she was not with a family member and she found school attendance difficult. She saw a clinical psychologist for help and gradually returned to normal functioning. More recently, a few months after her weight loss and dieting occurred she was referred to the local adult psychiatric service and attended four sessions.

On Interview and Examination

At interview she was dressed in loose clothes, appeared emaciated, and was cooperative. However she became distressed and cried during much of the interview but was able to give a good account of her feelings and difficulties. She described many depressive features over the recent months such as sadness, sleep

disturbance, self-blame, irritability and also had suicidal ideas. She had a high degree of weight and food preoccupation, and wanted to be “bony”. She had a specific dislike of the appearance of her face, wanting her hair to be long, and saying she hated her nose., “its just too big”. She said she wanted help, especially to try to accept her as she was, but did not know what would be most suitable. Both her parents appeared concerned and wanted help. Her mother had a high level of concern and involvement with her life and appeared rather critical towards the father.

On physical examination, her height was 159 cms, weight 36.3 kg, BMI 14.4. She had lanugo hair, cold hands and feet, and mature secondary sexual characteristics.

Diagnostic Formulation

Diagnostically, she had restricting anorexia nervosa, with illness duration of nine months. She had current depressive disorder and a past history of anxiety disorder. She was predisposed to anorexia nervosa in view of her temperament and personality. Identifiable stressor included leaving school, feeling overwhelmed by the academic demands of studying for many A levels. There appeared to be a number of stresses in the family, and the fact that she was the youngest daughter may be related to the high level of involvement of her mother. The parents and the adolescent were active help seekers, and wanted help in this service setting, having had recent contact with local adult psychiatric services.

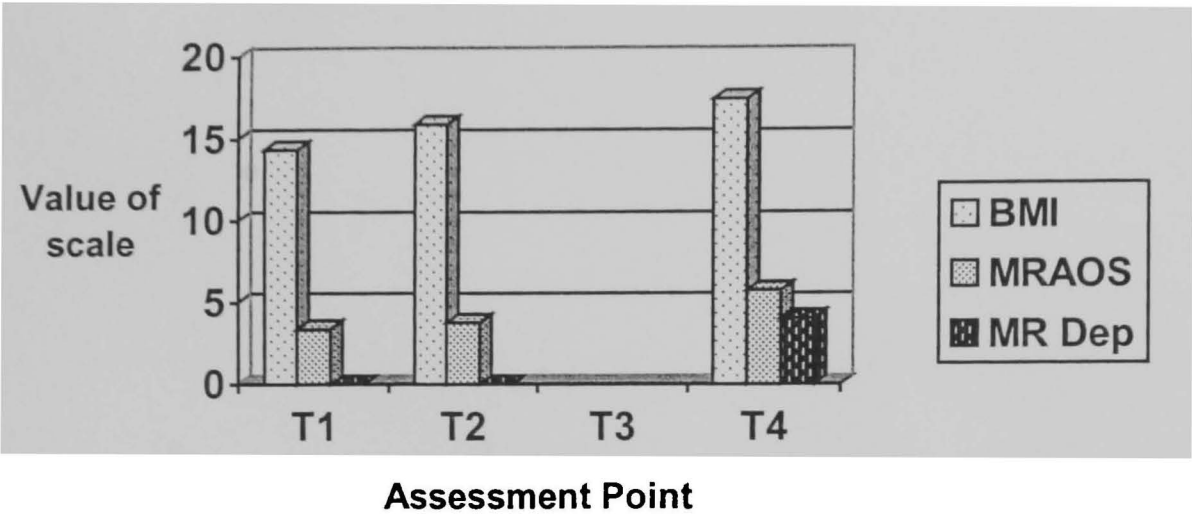
Treatment Progress

The family were offered separated family therapy and attended 8 sessions over three months. Initially treatment progressed well and her eating and weight improved. However A increasingly felt she did not want to attend and that she wanted to make further progress on her own. Her parents felt they could not force her back into treatment. Her parents attended for the second assessment without A. A agreed to a telephone interview at T4, so information about her progress could be obtained. She was eating regular meals, and she still had some preoccupation about eating and weight. Her weight had reached a plateau, with BMI being 17.4. Her amenorrhoea continued. Her mood had improved but she had depressive symptoms and tension. Her social adjustment had improved and she had restarted an A level course and was enrolled at college. She had a more active social life and expressed a wish to have more independence from her parents, and live independently. However she had no boyfriend nor interest in a sexual relationship, and she said she would not want children in the future.

At the final assessment she was rated as having poor outcome. The data in figure A3 indicates the progress made in individual measures. The changes in parental expressed emotion are based on their attendance for the first two assessments.

Figure A.3

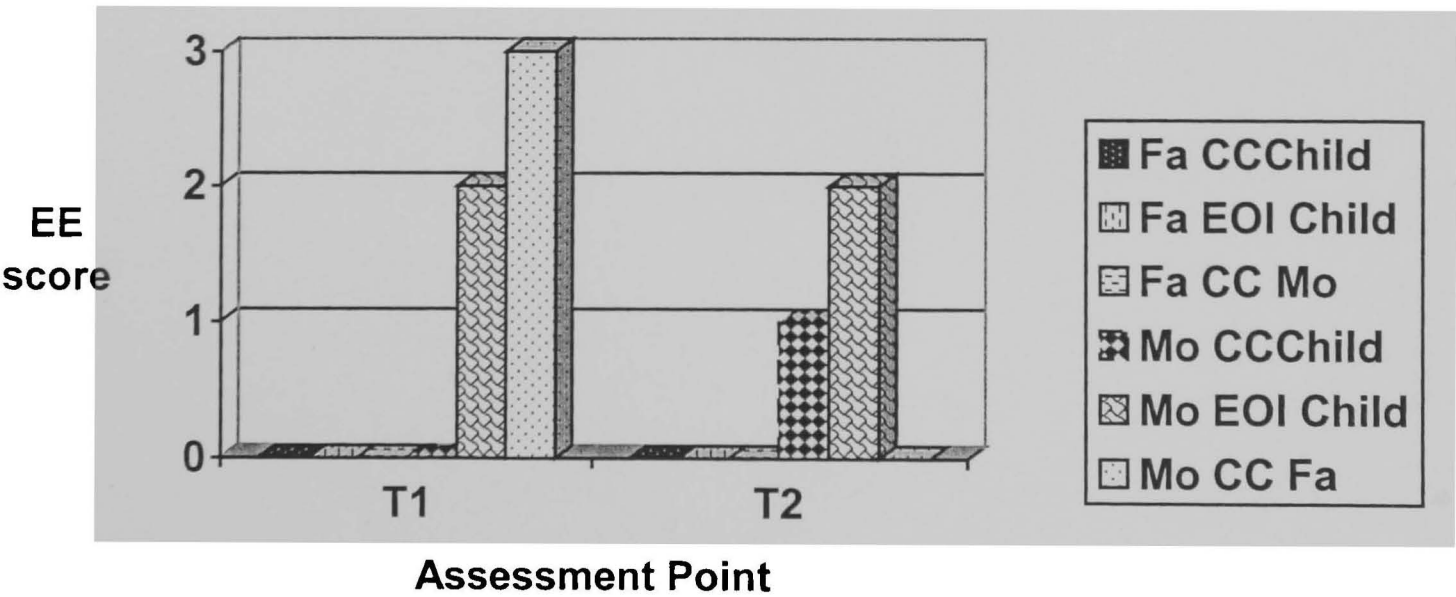
Progress of child A: individual measures



N.B.
Increasing scores indicate return to normal functioning over one year of treatment. Maximum score, i.e. healthy score for MR scales is 12.
No data available at T3.

Figure A.4

Progress of child A: parental expressed emotion



Key: Fa CCChild: Father's critical comments to child; Fa EOI Child: Father's emotional overinvolvement to child; Fa CC Mo: Father's critical comments to mother; Mo CCChild: Mother's critical comments to child; Mo EOI Child: Mother's emotional overinvolvement to child; Mo CC Fa: Mother's critical comments to father.